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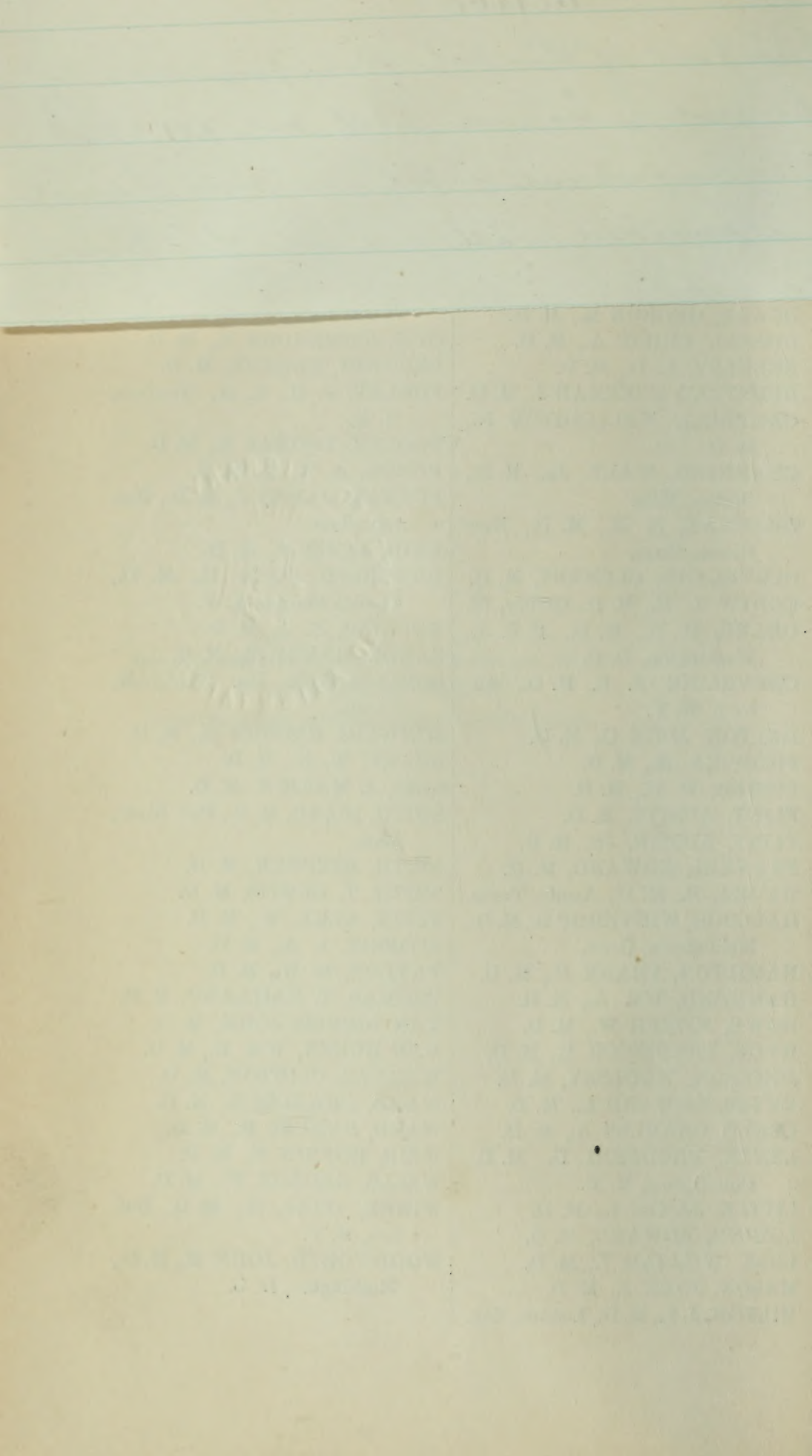
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INDEX.

	PAGE
Abdominal Section, Successful Case of,	208
Abuse of Medical Charities,	98
Academy of Medicine, New York, Proceedings of,	191
Acardia, Case of. By W. T. Lusk, M. D.,	176
Academy of Medicine, Anniversary Meeting of,	97
Actual Caustery, how to use the,	107
Addison's Disease, The Urine in,	653
Adulteration, Extraordinary,	98
Alabama State Medical Association,	657
Albany Medical College,	555
Albany Medical College, Alumni Association of,	553
Albany County (N. Y.) Medical Society,	99
Alumni Association, Bellevue Hospital Medical College,	441
Alumni Dinners,	555
Alumni Meetings,	550
American Journal of Obstetrics,	658
American Microscopical Society, Officers of,	445
American Medical Association,	548
Amputations,	515
Amputation by India-rubber Ligatures,	102
* Aneurism, Case of Popliteal, cured,	507
Annual Prize of the American Journal of Obstetrics,	657
Appointments, Reception Hospitals,	660
Appointments, Bellevue and Charity Hospital,	659
Appointments, Honors, etc., 94, 215, 329, 547,	655
Army Medical Rank,	444
Army Medical Grievance,	222
Army Intelligence, 334, 446, 553, 557,	661
Ascaridi, Transmigration of,	83
Balanitis, Oil-Dressing in,	610
Beard, George M., M. D., Cases of Nervous Disease,	395
Bellevue Hospital Medical College, Commencement Exercises of,	444
Bellevue and Charity Hospital Appointments,	659
Bellevue Hospital, Notes of Practice in,	606
* Bile, Spectrum of. By J. C. Dalton, M. D.,	579
Biliary Calculi, Discharge of, by Abdominal Fistula,	214
Bissell, P. A., M. D., Case of Fracture of Radius and Ulna,	61
Blisters, New Method of treating,	84
Bloodless Operations. By M. Figueira, M. D.,	163
Blood, Tests for,	613
Books and Pamphlets received, 74, 202, 315, 438, 544,	645
Boston Society of Medical Sciences, Proceedings of,	611
Bowel, Evacuation of a Portion of,	111
Bowels, Case of Obstruction of,	179
Breathing in Rarefied Air,	659

	PAGE
Bright's Disease, Etiology of,	77
Buck, Albert H., M. D., on the Mechanism of Hearing,	563
Bulkley, L. D., M. D., Cases of Congenital Syphilis,	497
* Cancer, Report of Debate on,	647
Canada Medical Association,	557
Caoutchouc Electuary as a Remedial Agent,	110
Carotids, Ligature of External and Internal. Stephen Smith, M. D.,	40
Carbuncle and Malignant Pustule, Treatment of,	79
Cerebral Hemisphere, Destruction of, without Functional Disturbance,	108
Chancroids, Treatment of,	610
Chancroids, Painless Method of cauterizing,	517
Chancroids, Iodoform for,	517
Chain-Saw, New Instrument for conducting,	495
Chapman, S. H., M. D., Translation of Schlesinger,	133
Chelis and Lepra, Cases of,	171
Chicago Journal of Nervous and Mental Diseases,	331
Chilblains, Treatment of, by Electricity,	86
Circumcision, the Rite of. By L. H. Cohen, M. D.,	160
Clavicle, Fracture of,	515
Coal-Gas, Fatal Case of Poisoning by,	220
Coffee, Action of, on Strangulated Intestines,	88
Cohen, L. H., M. D., on Circumcision,	160
College of Physicians and Surgeons of New York,	443
Colon, Stricture of, Case of. By Dr. H. B. Sands,	622
Colotomy, Cases of,	203
Colotomy, Lumbar. By J. H. Pooley, M. D.,	43
Colotomy, Recovery, Case of,	89
Contributors, Notice to,	445
* Congenital Syphilis, Rare Cases of,	497
Conception occurring Twenty Days after Delivery,	111
Contagiousness of Disease, Logical Proof of,	113
Copenhagen Hospitals, The,	100
Correspondence, Boston,	185
Corrections,	660
Cottage Plan for the Insane. By W. B. Hallock, M. D.,	1
County of New York, Medical Society of, Proceedings of,	627
Cremation in Austria,	554
Creveling, J. P., M. D., on puncturing the Mastoid Cells,	495
Cubebs, Rules for Use of, in Diphtheritic Pharyngitis,	85
Dalton, J. C., M. D., on Spectrum of Bile,	579
Dactylitis Syphilitica, Case of. By T. Curtis Smith, M. D., . . .	59
Deaf-Mutes, Education of,	661
Deformity of Extremities, Case of. By W. H. Sharp, M. D., . . .	51
Demoralizing Law, A,	100
Diaphragmatic Hernia and Rupture, Case of,	402
Diphtheria, Forty Cases of, treated by Local Applications, . . .	54
Double Uterus and Vagina, Case of,	514
* Ear-Disease, Three Cases of,	599
Editorial Changes,	222
Editorial Courtesy,	554
Editors, Association of Medical,	99
Elastic Ligature, Erichsen on,	334
Electrology, A New Journal of,	98
Embolism of Arteries of the Extremities. By S. B. Ward, M. D., .	257

	PAGE
Encephaloid of Ovary, Case of Cystic, at Eight Years,	52
Encyclopædia of the Practice of Medicine,	660
Epithelial Cancer, Origin of,	209
Erosions and Excoriations of Uterus, Treatment of,	77
Erysipelas, Treatment of,	84
Etiology of Bright's Disease,	77
Eucalyptus Globulus,	109
Eucalyptus, Naturalization of,	221
Extensor Paralysis, New Apparatus for,	491
Female Medical Students,	221
Female Medical College, The New England,	99
Fibro-myoma, Subcutaneous Use of Ergot in,	211
Fibroids, Intra-Uterine. By J. Marion Sims, M. D.,	337
Figueira, M., M. D., on Bloodless Operations,	163
Fisher, W. R., M. D., Case of Sprained Ankle,	62
Flint, Austin, M. D., on Contagiousness of Disease,	113
Fog, Effects of the London,	220
Frost-Bite, with Cases. By Charles K. Winne, M. D.,	450
Galvanic Currents, Resistance of Human Body to,	618
Gangrene, Hospital,	516
Geneva, New Faculty of Medicine of,	333
Georgia Medical Association,	657
Giants in these Days,	555
Graduates in Medicine for 1874,	550
Graefe's Method of extracting Cataract, Modification of,	82
Graves, Memorial Statue to the Late Dr.,	556
Guinea Fee in London,	99
Gynæcology, American, abroad,	660
Hadra, B., M. D., Case of Obstruction of Bowels,	179
Hallock, W. B., M. D., on Cottage Plan for the Insane,	1
Hamilton, Frank H., M. D., Chain-Saw Conductor,	495
* Hearing, the Mechanism of. By Albert H. Buck, M. D.,	563
Hernia, Operation for, in a Young Infant,	112
Hernia, Case of Double Diaphragmatic,	402
Hospital, A Wonderful,	100
* Hospital Practice, Notes of,	515, 606
Hospital, A New, for Diseases of Throat,	219
Hudson, N. J., District Medical Society of County of,	220
Hudson River Hospital for the Insane,	96
Hyde, Frederick E., M. D., Chain-Saw Conductor,	495
Hydrate of Chloral in Uterine Eclampsia,	78
Hypodermic Injections as Derivatives,	654
Important if true,	556
Insane, Accommodation for, on the Cottage Plan,	1
Insane, Care of, in Illinois,	442
Internal Carotid Artery, Case of Hæmorrhage from,	34
Intertrigo and Eruptions from Scratching, Pomade for,	88
Intermittent Fever, Hypodermic Use of Quinine in,	232
International Sanitary Congress, Another,	661
Intra-Uterine Fibroids. By J. Marion Sims, M. D.,	337
Ischio-Rectal Fossa, Sinuses connecting,	609
Journalistic Notes,	339, 656

	PAGE
Kentucky State Medical Society,	658
Larynx, Billroth's Case of Excision of,	546
Laryngological Society, New York, Proceedings of,	194, 300, 421, 531
Leale, C. A., M. D., Case of Intra-recto-abdominal Manual Explora- tion,	169
Leipsic University,	334
Lente, F. D., M. D., on Hypodermic Use of Quinine,	232
Letter from Boston,	185
Light-Streak of the Retinal Vessels. By E. Loring, M. D.,	30
Lithotrity, Perineal,	609
Logical Proof of Contagiousness of Disease,	113
Loines, Jonas P., Resolutions on Death of,	192, 215
Loring, Edward, M. D., on Light-Streak of Retinal Vessels,	30
Lumbar Hernia, Case of. By W. N. Campbell, M. D.,	184
Lusk, Wm. T., M. D., Case of Acardia,	176
Lying-in Hospital of the City of New York,	554
McCreedy, Professor, Tribute of Respect to,	440
Manipulation, Sprained Ankle treated by,	62
Marrow, Transplantation of, in Sub-periosteal Amputations,	109
Mastoid Cells, Puncturing. By J. P. Creveling, M. D.,	495
Massage,	218
Medical and Surgical Memoirs,	660
Medical Charts of the United States,	217
Medical Department of the U. S. Army, Resolutions regarding,	192
Medical Heroes, A Memorial to,	216
Medical Library and Journal Association, Proceedings of, 221, 414, 533, 633	633
Medical Practitioners in Paris,	556
Medical Society of the County of New York, Proceedings, 193, 303, 418, 532	532
Medical Society of the State of New York, Proceedings of,	286
Medical Society of Bradford County, Pa.,	332
Medical Society of the County of Kings,	331
Medico-Legal Society, New York, Proceedings of,	416, 525, 629
Michigan University,	551
Milton, J. L., Cases of Chelis and Lepra,	171
Morphia, Extraordinary Case of Poisoning by,	278
Mulreany, Joseph, M. D., on Second Dentition,	10
Murderous Attack by Lunatics,	332
Museum and Library, Army Medical,	444
Musk, Hypodermic Use of, in Acute Anæmia,	87
Mutual Aid Association, New York Physicians',	97
National Board of Health, A,	332
Nelson, A. W., M. D., Forty Cases of Diphtheria,	54
Nervous Diseases, Cases of. By George M. Beard, M. D.,	395
Neurology and Electrology, New York Society of,	300, 407, 528, 629
Neurological Society, The New York,	445, 530
Neuralgic Ulcer of the Leg,	108
Neuralgia of the Testicles,	111
New Jersey, Medical Society of,	661
New York Hospital,	556
New York Pathological Society, Officers of,	333
New York Society of Neurology and Electrology,	330, 407, 528
Northwestern Medical and Surgical Society, Proceedings of,	527, 632
Notes of Hospital Practice,	515, 606
No Women need apply,	553

	PAGE
OBITUARY NOTICES :	
Agassiz, Louis Jean Rudolph,	335
Allen, Peter, M. D.,	448
Arnott, Dr. Neil,	560
Audhoin, Dr.,	224
Baylis, Henry, M. D.,	559
Bock, Dr. Ernst,	560
Bowen, William S., M. D.,	560
Butler, Samuel W., M. D.,	335
Cruveilhier, Dr. Jean,	559
De La Rive, C. G., M. D.,	224
Eastman, Prof. Sandford,	336
Fuller, Henry William, M. D.,	336
Griscom, John H., M. D.,	664
Henry, John Flournoy, M. D.,	112
Hermann, Dr. August,	448
Hitchcock, Alfred, M. D.,	559
Holston, John G. F., Sr., M. D.,	664
Howard, Henry, M. D.,	560
Hoy, Francis, M. D.,	448
Legros, Charles,	447
Loeffler, Dr. F.,	560
Menlewater, Prof. M.,	224
Molas, Dr.,	224
Papillon, M. Fernand,	336
Papillon, Dr. Sabin,	224
Pasha, Daoud,	224
Proctor, William, Jr.,	560
Roberts, William C., M. D.,	112
Schultze, Dr. Max,	336
Simpson, Josiah, M. D., U. S. A.,	448
Underhill, Alfred, M. D.,	222
Uytterhoeven, Dr.,	224
Webb, Francis C., M. D., F. R. C. P.,	224
Wendling, Dr.,	224
Winslow, Dr. Forbes,	448
Wright, Francis Markoe, M. D.,	560
Otis, Fessenden N., M. D., on Urethrotomy,	360
Ovariectomy, Two Successful Cases of,	91
Ovariectomy, Case of. By Charles H. Richmond, M. D.,	181
Ovariectomy under Difficulties,	552
Pathological Society, New York, Proceedings of,	419, 517, 622
Pathology of the Sympathetic,	76
Penis, Case of Congenital Curvature of,	281
Penis, Case of Novel Disease of,	606
Penis, Novel Disease of. By W. H. Van Buren, M. D., and E. L. Keyes, M. D.,	390
Penitentiary Reform,	661
Pepsin, Value of,	218
Peristaltic Action of the Arteries. By L. A. Stimson, M. D.,	382
Perchloride of Iron, Death from Use of,	333
Perchloride of Iron, Antiseptic Properties of,	650
Pharmacopœia, the British,	222
Pharmacy in California,	661
Phonometric Examination of Chest and Abdomen,	210
Phthisis, Treatment of,	610

	PAGE
Pleurisy with Effusion, Line of Dullness in,	616
Pneumogastric, Contributions to Physiology of,	652
Pneumonia, Treatment of,	610
Poisoning in England, Penalty of,	556
Pooley, J. H., M. D., Case of Tracheotomy,	509
Pooley, J. H., M. D., Records of Cases,	43, 50
Pooley, Thomas R., M. D., Cases of Ear-Disease,	599
Prize, Annual, Joseph Mather Smith,	442
Psoriasis, Treatment of,	80
Public Health Association of New York,	633
Puerperal Fever in Australia,	98
Pulmonic Candles,	334
Pullman Cars in England,	555
Pyo-Nephrosis,	608
Quinine, Hypodermic Injection of,	232
Radius and Ulna, Case of Compound Fracture of,	61
Rank of Medical Officers in the U. S. Army,	93
Rectum, Case of Cancer of,	43
Rectum, Treatment of Ulceration of,	609
Registration Law in Kentucky,	557
Reports on the Progress of Obstetrics,	91
Reports on the Progress of Surgery,	89, 203, 647, 546
Retinal Vessels, Light-Streak of. By E. Loring, M. D.,	30
REVIEWS AND BIBLIOGRAPHICAL NOTES:	
* A Treatise on Therapeutics, Materia Medica, and Toxicology. By H. C. Wood, Jr., M. D.,	624
* A Practical Treatise on the Surgical Diseases of the Genito- Urinary Organs, including Syphilis. By Wm. H. Van Bu- ren, M. D., and E. L. Keyes, M. D.,	641
* A Clinical History of the Medical and Surgical Diseases of Women. By Robert Barnes, M. D.,	536
* A Practical Treatise on Diseases of Children. By J. Forsyth Meigs, M. D.,	533
A Practical Treatise on Diseases of the Ear. By D. B. St. John Roosa,	196
A Universal Formulary. By R. E. Griffith, M. D.,	437
Clinical Reports from Private Practice. By John H. Claiborne, M. D.,	305
Clinical Researches in Electro-Surgery. By Drs. A. D. Rock- well and George M. Beard,	541
Comparative Anatomy of the Domesticated Animals. By A. Chauveau,	313
* Emergencies and How to Treat Them. By Joseph W. Howe, M. D.,	544
* Essay on Diseases of Children. By Wm. H. Day, M. D.,	539
Galvano-Therapeutics. By Daniel Prince, M. D.,	438
Hand-Book for the Physiological Laboratory. By E. Klein, M. D., J. B. Sanderson, M. D., and others,	74
Hand-Book of the Theory and Practice of Medicine. By Fred- erick T. Roberts, M. D.,	430
History of the American Ambulance, established in Paris dur- ing the Siege of 1870-'71. By Thomas W. Evans, M. D.,	643
Lectures on Clinical Medicine. By A. Trousseau,	70
Lectures on the Clinical Uses of Electricity. By J. Russell Reynolds, M. D.,	438

REVIEWS AND BIBLIOGRAPHICAL NOTES:

PAGE

Lectures on Fever. By William Stokes, M. D.,	645
Lessons in Laryngoscopy, including Rhinoscopy and Diseases of the Throat,	434
Ligation of Arteries. By Dr. L. H. Farabeuf. Translated by John D. Jackson, M. D.,	643
Medical Lexicon. By Robley Dunglison, M. D.,	202
Medicine in Relation to Mind. By J. Thompson Dickson, M. D.,	542
Physician's Pocket Case-Record and Prescription Blank-Book. By George E. Walton, M. D.,	543
Principles and Practice of Medical Jurisprudence. By Alfred Swain Taylor, M. D.,	306
Puerperal Diseases. Clinical Lectures delivered at Bellevue Hospital, New York. By Fordyce Barker, M. D.,	309
Report of the Board of Health of Philadelphia for the Year 1872,	644
St. George's Hospital Reports,	424
The Place of the Physician. By James Hinton, M. D.,	433
The Sphygmograph; its Physiological and Pathological Indications. By Edgar Holden, M. D.,	640
The Nature of Gunshot-Wounds of the Abdomen. By Eugene Peugnet, M. D.,	541
The New Chemistry. By Josiah P. Cooke, Jr.,	314
Treatise on Diseases of the Eye. By Carl Stellwag,	201
Treatment of Nervous and Rheumatic Affections by Static Electricity. By Dr. A. Arthius,	639
Richmond, Charles H., M. D., Case of Ovariectomy,	181
Ringworm, a Test for,	105
Robins, N. A., M. D., Case of Popliteal Aneurism,	507
Roberts, W. C., M. D., Resolutions on Death of,	95
Sands, H. B., M. D., Note of Explanation by,	441
Sands, H. B., M. D., Hemorrhage from Internal Carotid Artery,	34
Sanitary Congress, International,	445
Scapula, Fracture of Neck of,	606
Schlesinger, Dr. William, on Nerve Centres,	133
Scorbutus, Treatment of,	610
Second Dentition. By Joseph Mulreany, M. D.,	10
Siamese Twins, Autopsy of,	317
Silicate of Soda, Injection of, in Vesical Disease,	85
Sims, J. Marion, M. D., on Intra-Uterine Fibroids,	337
Smith, Stephen, M. D., on Ligature of External and Internal Carotids,	40
Society, A New,	222
Society, Medical, of the State of New York, Proceedings of,	286
Soft Palate, Case of Tumor of,	272
Spanish Wounded, Relief of,	556
Spleen, Removal of,	106
Spleen and Kidneys, Case of Double,	555
Sponge-Tents, Inoffensive,	333
State Medical Societies,	552
Stein, Alexander W., M. D., on Retention of Urine,	464
Stimson, L. A., M. D., on Peristaltic Action of Arteries,	382
Stone in Bladder, New Method of operating for,	206
Students at the German Universities,	99
Sugar, Modification of Tromer's Test for,	632
Suppuration, Treatment of Profuse,	611

	PAGE
Surplus Benevolence,	557
Surgical Instrument, A New,	221
Sweet-Oil as a Dressing for Wounds,	516
Tennessee State Medical Association,	658
Testicle, Case of Painful Enlargement of,	50
Texas State Medical Association,	655
Thomas, T. Gaillard, M. D., on Uterine Pathology,	225
Tobacco-Poisoning, Fatal Case of,	110
Toothache, Cure of, by Electricity,	104
Transfusion of Blood,	85
X Tracheotomy for Relief of Dyspnœa,	509
Translations,	76, 209, 650
Tuberculosis, Transmissibility of,	212
Tumor of Soft Palate, Case of,	272
Ulna and Radius, Fracture of,	607
Underhill, Dr., Resolutions on Death of,	96
University of Pennsylvania, The,	443
University of Michigan, Homœopathy in,	219
University of the City of New York, Annual Commencement of,	445
Uræmia, Relation of Carbonate of Ammonia to,	212
Urethrotomy in Cases of Stricture. By F. N. Otis, M. D.,	360
Urine, Retention of. By Alexander W. Stein, M. D.,	464
Uterine Pathology, General Considerations upon,	225
Uterus, Nerve Centres of Circulation and,	133
X Uterus, Case of Double. By D. P. Austin, M. D.,	514
Vaccination, Animal,	191
Van Bibber, John, M. D., on Extensor Paralysis,	491
Van Buren, William H., M. D., on a Novel Disease of the Penis,	390
Variola in the Female Sex,	87
Vaseline,	659
Vermiform Appendix, Case of Occlusion of,	625
Violet Light, Action of, on Vegetable and Animal Life,	86
Vivisector in Trouble, A,	332
Wagner, Clinton, M. D., Case of Tumor of Soft Palate,	272
Ward, Samuel B., M. D., on Embolism,	257
Weir, R. F., M. D., Case of Curvature of Penis,	281
Widows and Orphans, Society for Relief of,	217
Winne, Charles K., M. D., on Frost-Bite,	450
Woodward, John M., M. D., Case of Diaphragmatic Hernia,	402
Writer's Cramp, Origin and Treatment of,	81

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VOL. XIX.]

JANUARY, 1874.

[No. 1.]

Original Communications.

ART. I.—*Accommodation for the Insane on the Cottage Plan.*

By WINTHROP B. HALLOCK, M. D., Assistant-Physician to the Connecticut General Hospital for the Insane, Middletown.

[CONCLUDED.]

IN a previous article it was attempted to show that the present method of providing hospital accommodation for *all* the insane was defective, being inadequate, by reason of its want of scope, to meet the demands of the dependent class; that it was unnecessary to provide such accommodation for all varieties of insanity; and that no State was ever likely to thus accommodate its whole insane population. We advocated the cottage system, so called, but which is more properly a combination of the cottage with the hospital plan. It is our purpose, in this paper, to consider this plan further, as to its merits and details, and the objections that have been offered against it.

Taking the insane of any section, including the annual expectancy, which is one in about every seventeen hundred of the population, hospital accommodation for one-quarter, we have said, would suffice. Others have put the hospital

cases at one-third. Our plan and estimates will be upon the basis of one-quarter hospital.

We proceed by referring first to the detached buildings or cottages. Imagine, as supplementary to a central hospital building, a group of houses, for each sex, constructed somewhat after the following outline: A structure, two stories in height, with cellar; walls of the building no more massive than those of an ordinary dwelling-house; first story to contain attendant's room, day-room for patients, kitchen, pantry, dining-room, and wash-room; second story to contain sleeping-space for patients, about one-quarter in single rooms, and the bath-room. The privy, which is detached, should be connected with the house by an inclosed passage-way. The attendant's room should command a view of the entire airing-court, and the patient's day-room should open directly into the latter, or upon a broad veranda projected from this side of the house; heating by furnace, though stoves can be used with safety; lighting by gas; ventilation by means of flues terminating out of the roof; water for bathing, cleaning, and cooking purposes. These houses to stand distant from the main building, and from each other, so that, in case of fire, no other structure would be endangered. In locating them it will be found advantageous, in some cases, to have one inclosure, or airing-court, embrace two cottages. The broad veranda above mentioned would take the place of the usual airing-court summer-house, and this veranda could be so constructed as to admit of being closed in cold weather, and used in connection with the day-room. Graveled or plank walks, and macadamized roads, would connect these buildings with the central ones. The most distant cottage would not be more than three minutes' moderate walk from the executive building. The food would be supplied from a common kitchen, and carried by hand. The capacity of these structures would be for thirty patients each, with two attendants. In some places, however, modifying circumstances might exist, requiring, in part, larger or smaller buildings. For the farm (working) patients, if their work is at some distance, the building designed for them might be located nearer to their work, and planned so that the cooking could be done for them in the same building.

Each building can be adapted, the same as a ward, to the needs of its inmates. The disorderly and destructive, or the filthy patients, need, of course, something different from the quiet, cleanly, and orderly. One cottage of each group should be of larger dimensions, better furnished, and the sleeping-space planned mostly for single rooms; this building to be for the use of convalescents, a few cases of recent insanity, and certain of the chronic cases, who are able to appreciate better surroundings. The sleeping-space in the other buildings should give to each patient not less than six hundred and thirty cubic feet;¹ the day-room, exclusive of the dining-room and veranda, which can be thrown into the latter, should allow forty superficial feet to each patient.

It will be seen that these buildings possess all the requisites of an ordinary hospital-ward, and differ from the latter only in this: the former possesses a kitchen, no corridor, and has different water-closet arrangements. The cottage has a decided advantage over the ward, in that the day-room is on the ground-floor and opens directly into the airing-court. The patients would be under the control of, and managed by, attendants precisely as if the cottage were a ward: the same discipline would exist in the latter as in the former.

Situated on each side of the executive building, and connected with the latter by a covered way, would be the hospital structure proper, with capacity to accommodate seventy-five of each sex (supposing five hundred to be the number to be provided for). In these structures we want nothing stately or massive; no domes, towers, or turrets; neither is it necessary to provide for forced ventilation, nor the usual hospital tramway, with track and car, for the food would be carried by hand—a tasteful but plain two-story structure, with all needed modern improvements, and adapted to the care of those who need *medical* treatment.

¹ It may be objected that the six hundred and thirty cubic feet of space in sleeping-rooms is too small. It is true it is less than is allowed theoretically in the modern asylum, but practically it is more than the patients get in three-quarters of our State asylums, owing to the fact that they are over-crowded. The question as to the proper amount of space that each person should have in sleeping-rooms should depend somewhat upon the means of ventilation at hand.

The executive building would be on a scale greatly reduced from the usual standard. This building would need no forced ventilation, but otherwise it would possess all needed modern improvements, and all the requisites for conducting the business of the institution, besides apartments for the medical and other officers. In the rear of this would be situated a building containing the general and special diet-kitchen, laundry, bakery, sewing-room, chapel, and amusement-hall, and rooms for about twenty of the employés. In close proximity would be the boiler-house, which, like the executive building, would be on a greatly-reduced scale. Under this arrangement the amount of boiler-surface necessary would not be more than one-third of that required under the old plan.

Such is a general description of the different buildings required for the accommodation of the insane on the cottage plan.

One of the principal objections urged against this plan is the cost—that it will exceed greatly, not only in the first cost of construction, but in the daily expense of carrying on an institution on this plan.

We have been at some pains to procure estimates of the cost of the various buildings described above, and find them (upon the basis of five hundred patients) as follows, all constructed of brick :

Executive building, fully furnished.....	\$41,000
Rear buildings, fully furnished and equipped	42,000
Hospital buildings proper, fully furnished.....	60,000
Cottage buildings, ten in number, and furnished (\$11,562 each)	115,620
Two convalescent cottages (\$15,000 each).....	30,000
Total.....	<u>\$288,620</u>

This, certainly, does not look as if the cost of an institution on this plan would exceed that of the hospital, but the reverse of what the opponents of the cottage plan assert. Comparing the large, massive hospital building with lighter, detached structures, we find this difference : In hospital buildings the plan of the structure is necessarily such that, in every story, not only in the wings but in the centre or executive building, there exists superfluous space, that is, space which

cannot be utilized, but which of necessity occurs in the present style of hospital construction. The centre building must, of course, be large, so that the whole may present a proper architectural appearance. The many stair-ways, hall-ways, corridors, etc., in these large buildings, take up an immense amount of space. Taking the wards alone, it will be found that each patient gets, in the corridors and day-rooms combined (sleeping and other rooms excluded) from seventy to ninety superficial feet of space. Now, this is very much more than they really need, and is almost twice as much as is recommended by the English commissioners in lunacy; yet all this extra room, besides the sleeping and other rooms, requires as much warming as any part—this being unavoidable under the present plan of construction. Of course, this involves an outlay in heating apparatus, boiler, and fuel, greater than would otherwise be needed. This extra expense would be avoided in the smaller buildings, there being no corridor-space, and, the sleeping-rooms not being used except at night, no heat would be wasted;¹ and the amount of heat required for one of these small structures would be two-thirds less than would be required for the modern hospital-ward calculated for the same number. The heated air entering a ward is diffused throughout all the vast space within it, the sleeping-rooms taking about one-half. Now, if the patients are kept in the corridors and day-room, all the heat that goes into their sleeping-rooms is wasted; and, if they are using both the corridors and their rooms, this amount of space is certainly out of proportion to their needs. The hospital ward, generally speaking, is, as it were, one vast area or room (or series of rooms), the whole of which must be used by only a certain number, even if the amount of space is several times more than they need. This waste—for it amounts to a waste—of space can be avoided in a small building, because it admits of being planned differently. The advantage of the latter is, that every part of it can be utilized, saving a vast amount of the labor of cleaning and repairing, which all goes for nothing in the large building; and, besides, the superfluous space of the latter has to be cal-

¹ The heat of the day-room of the cottage can be utilized at night for the sleeping-rooms.

culated for in the expense of construction, whereas in the former no such expense would be incurred. Again, in constructing cottages, the walls of which would be very much less massive than those of the hospital, a saving of building-material would be realized. Also a saving would result by the avoidance in cottages of those expensive appliances, the water-closet, and the machinery for what is called forced ventilation. As to repairs of buildings, the expense of keeping up the latter cannot possibly be greater than that of the former. True, the *walls* of the massive hospital structure may *stand* longer than the lighter walls of the small buildings, but who has not heard of the fact that hospital buildings may and do outlast their usefulness? and are we not already in this country beginning to talk of remodeling and removing altogether hospital structures for the insane? Because these buildings are constructed upon a reduced scale, it does not follow that they cannot be well made, and strong enough for the purpose for which they are designed; a huge, massive building may be shabbily constructed, requiring frequent and extensive repairs. Nor will it be necessary, as some imagine, to increase the force of attendants. Why should the same number of patients need more attendants in one place than in another? The work of transporting the food, clothing, etc., can be done by the aid of the patients themselves. From the male cottages enough help can be obtained, not only to do their own work of this kind, but that also of the female cottages; and this help need not be drawn from the force of patients who work steadily on the farm, but other cases who can be got to perform light jobs not of long duration. It is much more easy to induce patients to take hold of work when they are living near the ground, and in a manner more nearly approaching family life. This fact has been demonstrated beyond a doubt at the Connecticut General Hospital for the Insane, by the superintendent of the institution, Dr. A. M. Shew,¹ who in the fall of 1871 began practically to test the cottage system. He has made a more thorough trial of a combination of the cottage and hospital plan (the plan we are advocating) than any other superintendent in this

¹ Seventh Annual Report.

country, demonstrating several facts regarding the working of the system which had hitherto remained in doubt.

Nobody disputes the fact that, other things being equal, it is relatively cheaper to provide for and take care of five hundred persons in one building than it would be in many; but taking the modern asylum building as it is, and comparing it with the buildings we have described, the difference of cost in favor of the latter must be at once admitted. Detached buildings, for a needlessly small number, built massively and with hospital appliances, and rendered difficult of access by being scattered over a large area, would not meet with our approval: such a scheme could be justly criticised as expensive; yet, almost invariably it is from this stand-point that objectors to the cottage system view the latter, without stopping to consider whether, if a certain plan proposed be impracticable, it may not by suitable modifications be rendered feasible. On the other hand, we find a few who object to it on the ground of the appearance of cheapness. To provide for these poor, unfortunate creatures otherwise than by erecting a stately hospital edifice is deemed unworthy of any State in this hospital-building age.¹ The result of this doctrine is, practically, to keep a large portion of the insane forever in almshouses. A few years ago, when it was proposed to care for the chronic insane separately, and in buildings other than hospital, this outcry of cheapness was raised in default of having any substantial reasons to offer against it; the objections to the plan were purely sentimental. The establishment for the chronic

¹ To show how in the direction of needless extravagance this hospital policy is tending, we quote from an editorial which appeared not long since in the *Hartford* (Conn.) *Daily Courant*, headed "Costly Experiments in Building." A number of public buildings in New York are referred to. The facts were taken from a report "published by the finance committee of the State Senate of New York." It is found that on one of the hospitals now building there had been expended, including debts, over one million dollars, and yet "the work under the most favorable estimates lacks more than two-thirds of being completed." "If carried on as begun, this charitable enterprise will cost the State between three and four millions, while the largest estimate for the complete thing was not more than \$800,000." Other similar instances might be cited of needless expenditure on buildings for the insane, but this will be sufficient.

insane at Ovid, N. Y., seems to be working successfully, and the Commissioners of Charities accord to it praise equally with the other institutions of the State.

Again, the cottage plan is objected to by some on the ground that the discipline will be defective where the buildings are disconnected—that the patients will be abused, and that the officers will “constantly find excuses for not visiting them;” while others raise the objection that the cottage patients will be deprived much of the time by bad weather from attending the evening amusements or entertainments which are a part of the moral treatment. Now, this latter might be a serious objection provided the cottages were at a considerable distance from the main building, which they are not, according to our idea of the plan. We admit that an occasional storm will interfere, but the loss occasioned by it will be too insignificant to constitute an objection worthy of consideration. Regarding the officers failing to perform their duty in visiting the cottage patients, that is a matter wholly within the power of the superintendent to correct; and as to whether the patients are abused, the fact can be ascertained as readily in the detached as in the “close” building. To offer these as objections to the cottage plan is simply a begging of the question.

It would seem that those who think the insane as a whole need hospital accommodation must rest under the belief that they are *all* amenable to medical treatment, and in a helpless condition, requiring nurses to wait on them in every particular. Now, the very reverse of this is the truth. But the smallest fraction of the insane need medical treatment; and, as to being helpless, they do not, in general, need much waiting on: they need directing only. In their personal habits, under proper management, they are very much like sane persons; some on first entering an institution need only slight directing, while others need more attention; but the number of the latter is comparatively small. With our present limited knowledge of mental pathology, why not admit first as last that the insane—at least the chronic portion—instead of being so many persons to be doctored, are so many persons to be directed? Once discard this notion of medication, and no such idea as *hospital* would be suggested to the mind. Hospital

implies medical treatment and nursing. But what a small proportion of the insane in State asylums need or receive medical treatment! The benefit they receive by being in institutions is derived, not from the drugs they get, but from the wholesome discipline extended over them—in other words, the moral treatment they are subjected to; and this moral treatment, we believe, can be made more potent and far-reaching under the plan we are advocating than it can under the old traditional system.

Some writer has said that “the present methods of distributing charity, as a whole, are costly and bungling. They waste more than they help.” This truth is especially applicable to the wholesale hospital policy of the Association of Superintendents of American Institutions for the Insane. This Association is still reluctant to give up this one remaining traditional idea of prison-like walls indiscriminately surrounding the insane. It is true the Association recommends these hospitals to be “plain,” which they are as a general thing; yet, in so recommending, it is seemingly thought that, if the expense of ornamentation is done away with, buildings of gigantic proportions may be erected. But size, as well as ornamentation, is costly. Many of them are so spacious, containing such an excess of room for each inmate, that the cost of the building is almost equal to the cost of erecting for each patient separately a small house. To suppose that an insane person will recover any sooner, or with any more certainty, by reason of being placed in a room twice as large as he needs, or in a corridor, the ceiling of which is several feet higher than he has been accustomed to, is sheer nonsense. Now, it is in this “costly and bungling” way that States, in obedience to the recommendation of the above-named Association, are caring, or trying to care, for their dependent insane; they are unconsciously trying to provide for their pauper class the same grand and luxurious establishments as the rich are supposed to need. What the latter prefer and need in the way of a building does not concern us here, and it is immaterial, since they can pay for what they have. But what the poor need and prefer is, not the stately hospital, but rather the real home-comforts of life.

ART. II.—*The Constitutional Relations of Second Dentition.*¹

By JOSEPH MULREANY, M. D.

THE purpose of this paper being merely to illustrate a few practical points connected with the protrusion or cutting of the permanent teeth, I shall not attempt any dissertation on the physiology of dental development; nor shall I have to deal at all with the deciduous or milk teeth, save, perhaps, to mention that they should all have protruded through the gums by the thirtieth month, or within the second year after birth. And it is to be noted, as bearing on the subject, that, from that time up to the fifth year, children are usually exempt from dental irritation.

The permanent teeth—our theme of this evening—are thirty-two in number, and it is found that they observe the following rotation in cutting their way through the gums, viz.: From the fifth to the seventh year, the first four molars; from the sixth to the eighth year, the eight incisors; from the ninth to the tenth year, the four bicuspids; from the tenth to the twelfth year, the four cuspids; from the twelfth to the fifteenth year, the four second molars. The four third molars—the *dentes sapientiæ* or wisdom-teeth, as they are frequently called—may protrude at any time after the fifteenth year.

The inspectors under the British factory laws, which prohibit children under fifteen years of age from working full time, turn dentition to a practical use in those cases where a certificate of birth is not forthcoming, and refuse to all such younger employes a full-time license who have not got their four second molars present.

Now, I do not mean to tax your patience by taking up these sixteen pairs of teeth *seriatim*, and discussing the various ills to which they are heirs. I have, therefore, selected the first four molars and the four wisdom or third molars—eight in all—as the text of my present essay.

I cast about for no curiosities of disease. My illustrations are taken from every-day practice, and thus I proceed with my first demonstration:

CASE I.—Miss W——, aged now about twenty-six years;

¹ Read before the Medical Society of Kings County, N. Y.

when a child of between five and six years, was a patient of mine for morbus coxarius. The first indications of the joint-disease were lameness and pain when the head of the femur was strongly pressed against the acetabulum. In process of time the usual symptoms of pain in the knee, flattening of the hip, and shortening of the limb, took place, but all in a mild and modified form. All these symptoms at the end of her sixth year subsided, coincident with the complete protrusion of her first four molar teeth, leaving her slightly lame for life. She can at the present time dance and exercise as well as most young ladies. She is a member of a family of a highly-scrofulous diathesis. The treatment in this case I need not mention, and merely allude to it as being the first that drew my attention to the study and investigation of the constitutional relations of the permanent teeth.

CASE II.—On June 2, 1873, Margaret McC——, aged six and a half years, was brought to my office by her mother. She was born and resides in the neighborhood of Brooklyn, Long Island. She has had pain in the left hip-joint and knee of the same side for over a year, during which time she has been rather lame. She suffers from slight attacks of sickness, but has not been confined to bed for any length of time. Appetite generally good and bowels regular. For a few weeks back she appears to suffer more and to walk with a greater halt. These, at least, were her mother's replies to my queries. Upon examining the patient, I entered in my notes, "Three first molars through, right upper to come, two under incisors through, hip flattened, child in good condition." These memoranda are short enough, you will say. But they were not meant for publication. Had there been much pain, abridged motion, or other symptom, beyond the lameness and changed rotundity of the gluteal muscles, I certainly would have noted it. To be sure, the appreciable shortening of the limb, and arched instep—always associated with the flattened hip—were present. With a lancet I scarified the gum over the absent first right molars, and ran it thoroughly around the other three first molars, and prescribed the following :

R. Ferri iodidi,	3j.
Syr. ferri iodidi,	℥ ij.
Syr. zingiberis,	℥ ij.

Half a teaspoonful to be taken twice a day in water, with sena-tea if an aperient were required. I also ordered the gum over the upper right molar to be scarified with a penknife once a week till it came fairly through. Her father brought her to my office on the 15th of July (last month), very much improved. Her father believes that the teeth were the cause of all the hip-trouble and lameness.

I would observe that in these cases females suffer less pain and are more likely to escape with less damage to the joints than males, and that, contrary to what occurred in the last case, the bowels are generally constipated. And now, gentlemen, pardon me for a slight digression in explanation of my next case. Hitherto I have quoted no authority, and I shall now only refer to two writers—Dr. Jacobi, of New York, who has published a series of lectures on the deciduous or milk teeth, and Dr. Austin Flint, Sr., in whose large work on the “Practice of Medicine” a mere reference is made to empyema—a subject which forms a large item in this paper. I speak, therefore, for myself, when I say that every case of true morbus coxarius I have met with began between the fifth and seventh year, or it might be a few months earlier, and also whatever mischief occurred to the joints took place during the cutting of the first four molars of the permanent teeth, and that, after they had come fairly through, the process of reparation commenced.

These facts the following case will in a measure if not fully confirm, so I beg your marked attention to its details in an especial way, showing the influence which the protrusion toward the surface of coming teeth exercises over the system already burdened with the germs of disease.

CASE III.—C. D——, a male, resident in Brooklyn, when about twenty months of age, came under my treatment for chronic croup and enlarged cervical glands. The glands had suppurated, and were then discharging pus. The patient was in good condition, fed well and ran about as if in perfect health. About the twenty-fourth month every bad symptom had disappeared, and, with the exception of the cicatrices on his neck, there could not be a finer-looking child. He had cut all his deciduous teeth. Thus, he continued playful and

joyous up to his fifth year, when he was suddenly seized with pain in his left hip, which was attributed to a fall from off an ash-barrel on the sidewalk while at play. He was seen immediately by the late Dr. George Cochran, afterward by myself, then through my advice by Dr. Joseph Hutchinson, and finally by Dr. Sayre, of New York City. This case I watched attentively throughout its entire course. At my first visit I pointed out to the boy's mother the advent of these four first molar teeth, and told her that the hip-joint affection was caused by no supposed accident, but by the old scrofula of the glands of the neck developing itself in a new locality, and that the boy had two years of trial if not of suffering before him, but that she might look forward with hope, for, if we could moderate the irritation of the teeth, and if she perseveringly attended to my instructions, the case might be tided over in this as in the former instance, and her child recover with but slight damage to the joint. I prescribed the following formula, which with but slight modification he continued to take almost up to the time of his death. I may add that these also were the elements of the prescriptions which I gave him when an infant for the cure of chronic croup and scrofulous abscesses of the neck :

R. Ferri sulphatis,	3j.
Ammonia sesquicarb.,	3j.
Potassa subcarb.,	3j.
Syrup. zingiberis,	℥ ij. Mix well.

And, when all effervescence has subsided, add :

Potassi iodidi,	3j.
Aquæ puræ ad.,	℥ iv. Ft. mist.

of which he took a teaspoonful two or three times a day in water. And with this I also used the following anodyne :

R. Potassæ bicarbonatis,	3j.
Tinct. opii,	3 ij.
Sp. ammon. aromat.,	3 ij.
Aquæ puræ ad.,	℥ ij.

A teaspoonful to be taken when in pain. Moreover, a small blister was applied from time to time, for three-quarters of an hour, over the hip-joint. The gums I meant to have regularly scarified, but I was prevented from carrying out this

most important part of the treatment by the violence of the patient. I could never manage even to touch his gums with a lancet, and was so provoked that I relinquished the case on several occasions.

I then directed the mother to take her son to Dr. Hutchinson, an incident which introduces a new phase in the case. I had hoped that Dr. Hutchinson would have recommended the very simple contrivance of a single spring with ankle-joint which I saw him use at the Orthopedic Dispensary attached to the City of Brooklyn Hospital. I found, however, that the instrument-maker had fitted or rather misfitted to the limb one of those expensive, complicated, mischievous apparatus which does harm and never does good in such cases. The consequence was as might be expected: it pressed injuriously on the upper part of the femur, and produced an abscess that never healed up.

Well, time passed onward. The boy kept in capital condition—he was as fat as a mole—and entered on his seventh year. He slept well, and continued to take his mixture of iron and iodine. There was some trouble to keep his bowels open or regular. Sometimes he could walk without the aid of a crutch; but invariably, when he had a teething spell, he was forced to crawl about on all-fours.

Just as he had reached his sixth year and sixth month, his father returned from abroad, and at my suggestion took the little patient to New York, merely to have an opinion from Dr. Sayre on the case. Dr. Sayre examined the patient in consultation with his assistant, Dr. Yale; the parents of the child and myself, also several others, being present. The doctors were struck with the remarkably fine condition in which he was. Dr. Sayre diagnosed such an amount of disease as to warrant immediate resection of the hip-joint. But, from the deep interest I took in the case, I interposed and suggested, that “the child was cutting those four first molar teeth; that he was losing no ground by either pain, discharge, or hectic; that he possessed unlimited freedom of motion in the joint, and that it would be better to wait a little to see the teeth through before operating.” Dr. Sayre, however, did not agree with me; the boy’s father was in favor of the

operation. I waived my apprehensions, and permitted matters to develop themselves. Nevertheless, I was then impressed and am now convinced that it was a case of morbus coxarius brought into action by dental irritation, and that if left to itself a recovery would have resulted, with a limb more equal to locomotion than any that could be produced by operation. The result proves that I was correct in my diagnosis. Seven days after this interview with Dr. Sayre an amputation of the head of the femur was attempted.

The patient being put thoroughly under the influence of chloroform, the abscess on the upper third of the thigh was found not to communicate with the hip-joint. The most extravagant swaying of the limb could elicit no crepitus, and a deep and ample incision down to the capsular ligament assured the operator that the joint was too sound to justify him in cutting into it. The operation, therefore, was abandoned—sheerly because it was a case of dental irritation of the hip-joint.

As to the first case I mentioned, I am indebted for my introduction to the study of the constitutional relations of second dentition.

CASE IV.—On April 5, 1871, I was requested to visit a little boy, aged six years, residing in Carlton Avenue, in this city (Brooklyn). I met in consultation the medical gentleman who had been in attendance on the patient, and, in a preliminary conversation, I ascertained from him that “for the past six weeks the little boy was laboring under a kind of remittent fever; that in the early part of the day he was able to go out for a walk, but toward the late afternoon he became quite feverish and would pass restless nights; that the bowels were much constipated, and that upon the whole the patient was not in a comfortable condition.” I asked if he were cutting any teeth? He replied that they—meaning the parents—had not told him. I further put the question if he had had epistaxis; he replied that he was not aware—they did not tell him. I quietly suggested that it was the duty of the physician to discover for himself all these details. We then proceeded to the apartment where the invalid was lying on a temporary couch.

It was as I had anticipated, the first four molars straining forward like a double span of race-horses surging to the goal. The pillow-slip was bedabbled here and there with a few small blood-stains. I never once drew attention to either fact while in the presence of the patient's parents. I was satisfied of their existence, and that was enough. I put my ear to his heart and noticed anæmic bruit. After leaving the patient, I advised Dr. —, on his next visit, to liberate with the gum-lancet all those four teeth; to continue his quinine, but to guard it by exhibiting a mixture of acetate of ammonia and Epsom-salts. I took my final departure, not expecting again to see the patient. But, two days afterward, I met the patient's father—by-the-way, this is his only child—by mere chance, and, upon inquiry, I was chagrined to find that his child was if any thing worse, and that the gums had not been lanced, and that the quinine had been continued. I dispatched the father to tell Dr. — that I should visit Carlton Avenue at 2 o'clock P. M. I did so and waited for over fifteen minutes; then I proceeded to the patient's room, scarified the teeth, rewrote my former prescription, omitted the quinine, and gave the other necessary directions. Two days after, the child was quite over his attack.

We are often asked "What is the proper age to send a child to school?" And we reply, indifferently, "Oh, about seven years," not well knowing why we should select the seventh year in preference to the sixth or eighth. In a discussion on a paper recently read before the Academy of Medicine by Dr. O'Sullivan, on the "Hygiene of the Public Schools," Dr. Jacobi said that he could find no work in the English language that solved the difficulty of the time when a child should be put to study; and that he was obliged to seek for a solution of the point in the anatomical works of foreign artists, who give the true measurements of the chin and the nose, and from the facial angle to the toes. He concluded his observations by saying: "I suppose that about the sixth or seventh year is the proper time for a child to commence its studies." I supplement the learned doctor's research, and assert that by the seventh year those troublesome first four molars have quite protruded through the gums, and therein we have the key to the problem.

I have thus brought before the Society a few of the many points connected with the constitutional disturbance caused by the cutting of the first four molar teeth, and, with a few minutes devoted to the intermediate period, I shall proceed to the consideration of the third molars, or wisdom-teeth.

A medico-legal point of vast importance to the physician will sometimes arise between the eighth and fifteenth year, even earlier than that interval, which is well illustrated in the following cases :

In April last, an English lady, who had been only two weeks in this country, brought to my office, in New York, her little girl, aged ten years, laboring under a copious greenish-yellow discharge from the vagina. She boarded in a house with about forty others, and her child was in the habit of sitting on the men's knees, and, I believe, also even of running in and out of their bedrooms. She was impressed with the horror that her daughter had been either contaminated or outraged. I calmed her fears, and pointed out to her the inflamed condition of the gums over the bicuspid and cuspids, assuring her that the discharge was solely owing to that irritation. I scarified the gums, ordered bathing with tepid water and gave a saline aperient. The discharge disappeared in a day or two.

CASE VI.—Another case is that of a girl aged fifteen years, residing in New York, who for the past seven years had been laboring under ophthalmia of both eyes (psoriasis), for which she consulted me. I ordered her five-grain doses of the iodide and bromide of potassium, with five minims of Fowler's solution of arsenic in each dose, and fomentations of tepid water to the eyes. Within two weeks she was quite well; she had got twenty-eight permanent teeth through. Shortly after this, she was brought to my office by a married sister, laboring under a copious offensive purulent discharge from the genitals, with excoriations extending from the mons veneris to the anus. Her sister wrongly taxed her with criminality. I recommended bathing with tepid water, and prescribed a mixture containing paregoric and Epsom-salts. In the course of a few days the discharge, together with the excoriations, completely disappeared, and she menstruated for the first time. This was a chronic case of neurotic epithelial ophthalmia, or

psoriasis of the conjunctiva, kept up for those many years by dental irritation, and easily cured when the teeth had come through. But the cutaneous affection again showed itself in a different part as soon as the irritation was transferred from the teeth to the uterus. Such cases often form the grounds for criminal prosecutions, and cause unjust accusations that mar for life the peace and happiness of families.

The English law treats all illicit sexual intercourse with young females under sixteen years of age as rape, and, too often, discharges from the vagina, similar to those that occurred in the above cases, have been received as testimony of the fact. I would further remark, before proceeding with my subject, that this dental irritation develops, from the tenth to the fifteenth year where the pabulum exists, a serofulous meningitis that I have found always fatal, and I would also observe that all my cases were in males, and that I have not met with a case of the kind in this country.

The protean phenomena, associated with the period of dentition between the seventh and fifteenth year, are legion. Scrofula of the bones, wetting the bed, heart-affections, and chorea, are the most common. But we must proceed to the discussion of the four third molars, or wisdom-teeth.

CASE VII.—Mr. V. —, aged twenty-three, a mechanic and artist, married two years, no children, resides in New York City. He has been subject to violent bilious attacks for the past few years. These attacks come on without any assignable cause, and last for two days or so, when he recovers as rapidly as he is attacked. He is above the average height, and strongly built. He sometimes feels low spirited, has bleedings from the nose, and pain in the articulations of the lower jaw. He complains much of the want of sleep, lying awake for hours after getting into bed. Appetite good, bowels constipated. His wife tells me that she often wakes up in the middle of the night, and discovers him busy at work on one of his pictures. He is no enthusiast. None of the wisdom-teeth through. I scarified his gums, directing him to do the same frequently with a blunt pen-knife, and from time to time to take ten drops of the tincture of iron in water, to use the infusion of senna-leaves as an aperient. Cured.

CASE VIII.—Miss A. D., aged eighteen years. Tall and fair, with an anæmic look; cardiac bruit; has menstruated irregularly since her fifteenth year. She consulted me for violent headaches, and profuse epistaxis. Her father, who accompanied her, described the headaches as agonizing. She flings herself on the floor, beats her forehead against the carpet, and cries herself to sleep; this is followed by hæmorrhage at the nose, and then a respite of a few weeks. Wisdom-teeth on the advance, but not through. I scarified them thoroughly, prescribed quinine dissolved in tincture of iron, to be taken internally, senna as an aperient, and to have the scarifications of the gums often repeated. This young lady I meet occasionally. All her bad symptoms have disappeared.

The next case shows the irreparable damage that the irritation of the wisdom-teeth can do to the constitution, and yet what a little foresight might have prevented. Before, however, recording the case, I shall avail myself of the privilege of an author, and digress a little.

Since I began to see my way clearly in the diagnosis and treatment of these cases, I have experienced great confidence and comfort with my patients. Before my discovery of this dental irritation, my prescriptions came very close to the mark, but I found that my patients took them doubtingly. An individual coming to a physician for advice expects some light to be thrown upon his case. If he has got consumption or cancer, and if he has inherited it or them from his parents, he can see his way; but in affections peculiar to himself, and new to the family constitution, he is apt to seek an explanation. Now, in all my cases I distinctly tell the patient what I think to be the cause of his disease.

And I take this opportunity to caution this Society from (at any future period) doing me the injustice of confusing the irritation—physiological irritation—of a new tooth cutting the gum, with that pathological irritation (which is not mine) of an old, decayed, or carious tooth, producing periostitis and gum-boil.

CASE IX.—Miss B., in her twentieth year. A resident of New York; very pretty, tall, and exceeding fragile. Her history, given by her mother, went to show that she was a mem-

ber of a large family of healthy children, some older, some younger than herself; that, at the age of fifteen years, she was healthy and robust, and that she had menstruated regularly for several periods. About three years back, she was suddenly seized with profuse epistaxis, which necessitated plugging of the nares before it was arrested. Ever since, it has recurred at intervals, leaving the patient in an exhausted condition. She had had the best medical advice, and had taken the tincture and other preparations of iron repeatedly.

Upon examination, I discovered evidences of approaching phthisis of right lung, quick pulse, with loud anæmic cardiac bruit, amenorrhœa, frequent micturition, constipated bowels, and indifferent appetite. The wisdom-teeth had not shown themselves, and, upon questioning her closely, she remembered that previously to each bleeding at the nose she had suffered from jaw-ache. When her attention was called to her wisdom-teeth, she, turning to her mother, said that she had often thought of telling Dr. —, their family-physician, of the trouble that the gums gave her. I scarified the gums, urging the propriety of having the operation performed again and again, to take a sugar-coated two-grain quinine-pill twice a day, before meals. A similar pill, but of the iodide of iron, twice a day, after meals. Besides these, I prescribed five drops of the tincture of digitalis three times a day, and emphatically insisted that change of air was a *sine qua non* for her cure. I regret that I never heard of the termination of the case.

CASE X.—Miss E. S., aged seventeen years, born and residing in London, England, consulted me some years ago. I was very intimate with the family, and had known her from her childhood. She was short in stature and stout, but pale and exsanguinous. She complained of palpitations of the heart, dyspnœa, headaches, with constipated bowels. Her mother intimated that she was scarcely a day free from a flow of blood from the uterus. Upon examination I found the tongue coated, the gums and conjunctiva very pale and bloodless, and an effluvium of the breath peculiar to every class of patients of either sex, who have lost large quantities of blood. There was a loud chlorotic bruit with the first cardiac sound; pulse about 90. The wisdom-teeth the source of great

irritation. Some would call this a case of menorrhagia, caused by an inflamed fundus or cervix uteri, or perhaps proceeding from an ulcerated os. By no means. The protracted hæmorrhage was owing to nervous obstruction at the centre of the circulation, which was again caused by dental irritation acting directly on the heart. The result of the treatment proved the correctness of my diagnosis, for, by repeated scarifications of the gums, and the internal administration of iron and digitalis, she made a speedy and perfect recovery.

CASE XI.—Mrs. J. M. G., in her nineteenth year, a brunette, married six months; previously to her marriage she menstruated regularly, but ever since the consummation of her marriage she has had a colored discharge from the vagina, sometimes in large quantity. No other unusual symptom. None of the wisdom-teeth present. The speculum revealed the parts free from inflammation or ulceration, but it disclosed the healthy os uteri, instead of being occupied by the usual *pretty tear* of transparent, viscid mucus, gave passage to a constant flow of depraved blood. Treatment: scarifications over the wisdom-teeth, tincture of iron internally, with the happiest result.

The following two cases will speak for themselves. They back up my position, and by coincidence borrow support from Dr. Austin Flint's work as already mentioned.

CASE XII.—Thomas M., aged nineteen years, a resident of East Twenty-third Street, New York. I visited him for the first time on June 18, 1872. I found that he had been under the treatment of a physician, but I had not the advantage of a consultation with him, though the patient told me that he had been treated for lung-fever. I abridge the history of this case, and merely state that in April, 1872, he first experienced slight chills, restless nights, palpitation of the heart, dyspnœa, constipation, epistaxis, and general discomfort, but with a total absence of cough, till within a short period before my visit. Upon examining his chest, I found the cavity of the right pleura occupied by a large quantity of fluid, and the apex of the lung itself containing a small cavity. The jaws were very tender, and he had been cutting his wisdom-teeth for

the past twelve months, all four partly through the gums. On a subsequent visit I measured the chest, and found the right two inches of greater girth than the left or sound side; I also discovered a loud splashing sound on succussion, audible to those standing several feet off. There was no metallic tinkling in this case. I mentioned my views, which were decidedly unfavorable, to the patient's friends, and they called in Prof. Clark, whom I met in consultation. The case was almost as new to me as to Dr. Clark, so he learned its history from the patient. He proceeded to make an examination of the chest, where he said that there was "considerable fluid," gave hopes of a slow recovery, and prescribed six drachms of the carbonate of potash in six ounces of water, a tablespoonful to be taken every two or three hours, mixed with one of lemon-juice. The diuretic produced diarrhœa, and the patient had put it aside before I visited him the next day. Nothing can cure empyema but the trocar and canula; and, in order to give the patient that one chance, I borrowed of Dr. Hutchison the instruments for the purpose of performing paracentesis. Nature, however, anticipated me. The patient was seized with cough and violent retching, and he brought up enormous quantities of a drab, odorless fluid, and died two days after.

The two cases of empyema mentioned by Dr. Flint he saw in consultation respectively with Drs. Dudley and Burge of this city; the patients were aged ten and eighteen years. You will please to observe, within that period of dental irritation which I discuss, Dr. Flint does not appear to have seen much of empyema. I have been more fortunate.

CASE XIII.—Michael R., aged nineteen years, a resident of the town of Flushing, Long Island, where I saw him in consultation with Dr. A. Burke, of New York. He had been a length of time treated for remittent fever, when the physician discovered that his patient had lost his left lung. I saw him on the 27th of April last. The cavity of the left pleura was full, up to the clavicle with fluid; there were distinct splashing sound and metallic tinkling, with comparative enlarged girth of the affected side, large moist crepitation in the apex of the left lung, cardiac bruit, wisdom-teeth merely

protruding, gums over them very tender. I proposed paracentesis, but thought that it would not save him. I gave him about two weeks to live. His death took place on the 10th of May (the following month). It was preceded by the discharge by the mouth, from the chest, of pints of the drab, odorless fluid.

Dental irritation is the cause of dropsical effusions, and these cases of empyema embraced within this section of my paper originate in a serous fluid exuded from the pleura itself, and especially disconnected with the parenchyma of the lung. This view explains the characteristics of the ejected matter in the last two cases. The density, color, freedom from odor—even when complicated with pneumothorax—distinguish it from the stinking pus and offensive gas of that other empyema caused by phthisis, carious or fractured ribs, gangrene of the lung, abscesses of either liver or lung, and the lodgment of organic foreign bodies within the thorax. I have seen two cases of ascites caused by dental irritation in females under fourteen years of age spontaneously effect their own cure by bursting through the umbilicus and slowly discharging their contents. Abdominal dropsy from any other cause could not possibly have done so. True pus will make its way through the walls of the chest by the process of ulcerative inflammation, but in the empyema of dental irritation there is no laudable pus.

CASE XIV.—I attended a lady in London who came to town from a neighboring shire where ague was prevalent. She was about twenty years of age, and laboring under the irritation I am now treating of. At her country-home she had been treated for dumb ague and dyspepsia, without benefit. On examining her, I discovered a stratum of fluid occupying the right side of the chest; she had intermitting headaches, hæmorrhage at the nose on rare occasions, bowels constipated, appetite good, with a feeling of hunger and faintness coming on about an hour or two after breakfast—this sensation is called *leerness* in England—in other respects she was healthy and in good spirits. Attention to the wisdom-teeth, the internal use of chalybeate remedies, and counter-irritation on the right side over the effused serum, cured her directly. She is now married and has had children.

I have found that every case of dental empyema is treated at first for some sort of fever, and that, from either carelessness or ignorance, they have advanced beyond remedy before being recognized.

You must have noticed the frequency of my reference to heart-complications in almost all my cases. In every instance of protracted rheumatic fever, that is, from six to sixteen or more weeks, in the young, I have detected the heart affected and the wisdom-teeth the cause; scarification of these teeth acts like a charm in curing them. Many obstinate cases of hysterical affections of the joints yield readily to scarifications of the gums, and iron. I saw a lady on last Saturday, in this city, that I am confident was rescued from death by the scarification of the wisdom-teeth. Four and a half months ago she got married. She became pregnant at once, and for eight weeks after she was prostrated on her bed by constant and violent retching and vomiting. She had been treated by an allopathic, and also by a homœopathic physician; I was then requested to visit her. I prescribed infusion of colombaroot, prussic acid, and soda, in combination, without effect; I gave tincture of capsicum and laudanum, vinum ipecac., and several other remedies, but without benefit. The entire abdomen was so tender that the least touch agonized her. From having been quite stout, she was reduced to a mere shell. What was remarkable in her case was that on digital examination the most violent percussion of the os, neck, and walls of the gravid uterus caused her no pain. Upon examining her wisdom-teeth, I discovered that some of them were still undeveloped, and the superincumbent gums were swollen and very tender. Those I scarified very thoroughly, and applied a dossil of cotton-wool very firmly against the os uteri. I was not again asked to visit her till Saturday the 16th inst.—that is, for an interval of two months—I found her quite free of all her worst symptoms, able to do all her sewing on a machine, and in capital spirits. She, in reply to my repeated inquiries—assuring her that I was concerned to have the precise truth, as I intended to mention her case to this Society—stated that from the time I scarified her gums she suffered very little sickness or pain; that she now feels a little nausea in the morning, that she has

a capital appetite for bread-and-butter and vegetables, but that ham is the only animal food she can fancy.

This is the period and this often the cause in the youth of both sexes of that pernicious habit of masturbation. It is marvelous the power of weaning them off the practice possessed by the aforesaid treatment. The form I prescribe is a combination of iron, digitalis or belladonna, true oil of cinnamon and benzoic acid, with the never-to-be-omitted scarification of the gums.

The *ennui* of troublesome or protracted dentition is the frequent cause of sterility or miscarriage within the early months of pregnancy. I have been consulted often and again by anxious husbands as to the cause of the absence of children, and have been able to reconcile them by pointing to the fact of their wives being about their teething, assuring them that when they had ceased to be children they would become mothers.

CASE XV.—Mrs. B., aged twenty-nine years, consulted me for intense headache, affecting only one side, and hæmorrhages at the nose; her hair was tinged gray, she was married for nine years, her husband living with her; no children, never pregnant; menstruates regularly; bowels constipated. Has been the round of the doctors—the last having treated her for womb-disease. The left third molars—the side affected—were causing the usual irritation. Treatment: scarifications, tincture of iron, and quinine, in combination. I have heard that she is much better.

The case of a national school-teacher, in Ireland, of itself affords proof enough of the constitutional derangement caused in fit subjects by the irritation of the wisdom-teeth. This gentleman was aged twenty-four years when I first saw him. He was the only remaining child of a large family. The cervical glands on both sides of the neck were so enlarged as to fill up the spaces between the ears and collar-bone, quite disfiguring his appearance, which in other respects was good. He stood six feet in height, and possessed a sturdy *physique*. By the advice of an excellent physician, he was taking cod-liver oil and quinine. I drew his attention to his wisdom-teeth, which had not made their appearance, directing him to

scarify the gums every one or two weeks; to continue the cod-liver oil and quinine, and to take also the tincture of iron. In twelve months' time the wisdom-teeth came through the gums and every vestige of the enlarged cervical glands had disappeared *pari passu*, or step by step, as the teeth came to the surface, the enlarged glands disappearing without softening or ulceration.

I was present at a meeting of the medical staff of one of the dispensaries of the city of —, when one of the surgeons introduced a lad on whose case he desired to have their opinion. The patient was about fifteen years of age, and looked to be in good condition. His cervical glands of one side of the neck were enormously enlarged. And the question asked by this surgeon was, "Should he dissect them out." The lad was carefully inspected by each physician, and passed round in silence. I too had a turn at him. Upon examining his teeth, I observed that he had only twenty-six; that the upper and lower second molars of the affected side were not through, but irritating the gums. I also noticed that the glands on the comparatively sound side had been enlarged, and upon interrogating him he informed us that about a year ago those glands were also enlarged, but that they were cured by a Dr. —. I suggested to the medical faculty the cause of the scrofulous enlargement of the glands, and the boy escaped an operation.

Four years since I was consulted by the parents of a young lady in this city. She was in her sixteenth year, highly intellectual; she was perfectly bloodless; she was tall for her years, but a mere waxen image. Menstruation was rare, and almost *nil* in amount. There was cardiac bruit. I do not now recollect if she had epistaxis. There was no organic lesion. The question asked of me was, Should this girl return to Canada to school, or remain at home under her mother's care? Seeing that she was the offspring of healthy parents, that she was free from disease other than dental irritation, and that change of air and a colder climate would best suit her, I unhesitatingly advised that by all means she should return to school. I also assured her parents that she would regain her strength and color as she cut her wisdom-teeth. She is now in her twentieth year, is becoming a fine, robust young lady, and I think that, in the course of the next six

months, she will have completed her second dentition. From time to time throughout these four years she has taken a combination of iron, iodine, and quinine. On two occasions she permitted the gums to be scarified.

Mr. President, I have thus had the pleasure, the very great pleasure, of bringing before the Medical Society of the County of Kings the subject of the constitutional relations of second dentition. I felicitate myself on the fact of my being a member of this Society, the first of the kind to which I ever belonged. It is dangerous ground for a novice to take, "the introduction of a new theory, speculation, or fact." But I have acted with circumspection. My argument is a recital of facts; and I advocate no extreme or violent treatment. Many of our best men have been carried away by what they supposed to be logic, but it was speculation outside of facts. Any thing we possess of intrinsic value in medicine is a coincidence, the unlooked-for result of a vulgar fact.

The late Dr. Elliotson, of London, destroyed a good professional reputation by his adhesion to mesmerism. Dr. Marshall Hall alloyed his fame by opening the larynx for the cure of epilepsy. The late Dr. Baker Brown, a gynaecologist of high repute, ruined his character and fortune by the introduction of cliterodectomy. And at the present time there are physicians and physiologists taking up very questionable positions.

In my paper will be found a ready explanation of cases that heretofore appeared unaccountable. Through it, anomalous symptoms can be explained. If taken up by gentlemen of large practice and ample intelligence, who by practical experience and a critical mind can thoroughly analyze it, I have no doubt but that we shall have the subject placed before the profession in an improved form, supported by ability of language and a large accumulation of facts.

NOTE.—Besides the morbus coxae mentioned in the text, the hip-joint is liable to inflammations proceeding from caries or necrosis of the femur or os innominatum, and from toxæmia. The first are of average frequency with similar complications of the spine (Pott's), knee-joint (white-swelling), elbow and ankle joints, and the compound joint of the occipital bone and the first two cervical vertebræ. Of the latter, or toxic, I have seen many cases. Four occurred in children between the twelfth and fifteenth years

of age, from scarlatina metastasis from the ulcerated throat to the hip-joint. One of these, a female, was cured without any damage to the joint, One, a male, had a quick suppuration of the joint, which opened and discharged externally. He recovered, with perfect power of the limb, and without a halt in his gait. Another male, aged about twelve years, had an attack of mild scarlatina, with rheumatism of all the large joints, ending in acute inflammation of the left hip-joint. Matter was rapidly formed, and it burst its way through the thigh in Scarpa's space. He had lost all pain and was progressing well, when he was seized with profuse venous hæmorrhage from the abscess, and died before it could be arrested. One, a female, was killed by being bled from the arm first by one doctor, and given large doses of the potassio-tartrate of antimony by another doctor. I saw a boy, aged eighteen years, who had purulent deposits in all the large joints, from diphtheria. The result I do not remember. I have, within the last two years, seen two married women with abscess of the hip-joint from gonorrhœal poisoning. Now, all of these cases of animal poisoning, such as related in those six, are easily treated and cured. If possible, they should be removed to hospital. At all events, the nurses should be persons of great firmness. Sympathizing friends must be excluded. Extension by means of the pulley and weight suit the gonorrhœal cases best. The broad deal board, reaching from above the head to well beyond the heels, with the entire body of the patient firmly bound to it, is by far the best mechanical contrivance for the young suffering from scarlatina or other zoonic poisoning. But in all cases, old or young, utter rest and opium, opium either in tincture, solution, or in solid form. I have not so much confidence in morphia.

NOTE 2.—Since the foregoing paper was written, I have met with numerous cases bearing on the text; and, as the following strongly illustrate the paragraphs embracing chest-affections, I think that a short report of them is quite opportune, especially as the propriety of opening into the thorax is now engaging the attention of at least one of the senior physicians at Bellevue Hospital. Indeed, there is a male patient at present in ward 32, who had his right pleura incised. On the 21st of September last, assisted by Dr. John W. Brennan, I operated on a young man, aged twenty-three years, and withdrew from the right side of the chest between two and three pints of the drab, colorless fluid, characteristic of dental empyema. He died the day succeeding the operation. I entertained no hope of a successful result; but, as death from expectorating pints of this viscid, sisy serum, or drab fluid, is very shocking, and as operative interference presents a chance, I yielded to the poor fellow's strenuous solicitation. This patient—a divinity student—had been cutting his wisdom-teeth for three or four years, and at the time of his death they were very painful and partially through the tender gums; he remarked to me that they always gave him trouble. He had been treated for phthisis, and no doubt had some sort of thickening of the apex of the right lung; he also had had hæmoptysis, but there was no history of the rupture of a vomica

or of a sudden pleuritis. Metallic tinkling was absent, showing that there was no communication between the lung and the empyema, which latter was of enormous amount.

I merely removed the quantity mentioned as a test of the patient's strength, intending afterward to have passed a loop of silver wire around a rib or through a portion of the intercostal muscles, so as to give slow exit to the entire accumulation. Now, mark the difference from the following case :

Mr. —, aged thirty-two years, has been the subject of lung-trouble for years, with frequent attacks of hæmoptysis. The lungs were faulty throughout, the right the weaker. He never had vomica nor pus sputa. In last February his right great-toe and head of the metatarsal bone were amputated for caries, since which time he has felt comparatively well. On Sunday, the 23d of November last, while dressing, he was seized with a sudden and violent pain in the left hypochondrium, extending to the clavicle and back to the scapulum. He was treated by a physician and relieved of the pain. On Thursday, November 27th, I visited him and diagnosed rupture of the apex of the left lung, with complete collapse of the lung, pneumo-thorax, and pleurisy. On the following day Dr. A. Flint, Sr., met me in consultation, and in a measure confirmed my diagnosis. He, however, thought that I should find an accumulation of fluid within the pleura, but did not specify the character of the fluid; indeed, I forgot to ask him. In the afternoon of the same day I operated by pinching up a large fold of the skin and subjacent tissue between the ninth and tenth ribs, and transfixing it, making an incision of about one inch and three-quarters. I then thrust a trocar and canula through the intercostals and pleura. A rush of air came whistling through the tube, followed by six or seven ounces of limpid serum, like distilled water. No pus, no fetor, no taint. The patient felt relieved, but the lung remained collapsed.

The entire left side of the chest is tympanitic, with almost—indeed, I might say—total absence of breath-sound. A probe passed through the artificial opening for four inches traverses merely an air-chamber, without impinging on the lung or other body, and from the opening a constant discharge of air, and serum in small quantity, emerge. There have been no rigors nor appearance of pus. Very little cough, no expectoration.

This very unusual case affords me the opportunity of suggesting a doubt of the propriety of operative interference in cases of the rupture of a tubercular vomica, and of urging the early tapping or incision of the chest in the hydrothorax and empyema of dental irritation. I have had no experience of aspiration, but many years ago (1840) I learned, while in China, that the Chinese and many of the tribes of Central Asia used a fine tube for the removal of air and fluids from the different cavities, organs, and tissues, after a similar fashion to the aspirator. This tube they carry with them as we do a toothpick. Its more especial use is to remove flatus from the bowels. It is now eight days since I operated on the subject of the last reported case, and on this day (Saturday) he is very dozy, but perfectly conscious; he reclines on the left side (the affected one); the respirations, though not evenly, are only twenty in the minute; pulse 108; bowels constipated (kept so). He is consuming a fair share of nutriment. He is taking fifteen minims of laudanum and eight grains of bicarbonate of potash every three or four hours. The lung is still collapsed; the artificial opening is still pervious. The prognosis is one thousand to one against him.

ART. III.—*The Light-Streak of the Retinal Vessels as a Diagnostic Sign.* By EDWARD LORING, M. D., New York.

SEVERAL years ago I advanced a new explanation for the light-streak seen in the centre of the retinal vessels with the ophthalmoscope. As the matter is still under discussion by those who have a greater aptitude for the deciding of such problems, I have nothing further to say concerning it. I should, however, like to add a few points connected with the subject that may prove to be of sufficient clinical importance to deserve mention should they be corroborated by the experience of others.

Any disturbance in the media lying in front of the retina naturally interferes with a perfect illumination of the bottom of the eye; and, inasmuch as the details of the fundus will be more or less obscured, the light-streak will be proportionately affected. Still, whenever, on this account, only a moderately distinct view of the fundus can be had, the light-streak on the retinal vessels will be comparatively well-marked, allowance being made for the general haziness of the media. But, on the other hand, though the media in front may be perfectly clear, the slight œdema into the retina will cause the light-streak to be much diminished or even to vanish entirely in the affected portions. And this takes place even if the œdema is confined to the immediate neighborhood of the vessel, and occupies, so to speak, only the peninsular space. Should the œdema be of any extent, the vessels have no central streak whatever, but present a uniform red appearance. This is markedly the case where œdema is very pronounced, as it sometimes is in embolism, or injuries from blows on the eye, or in some forms of acute retinitis.

Without laying too much stress upon it, I had been led to look on this absence or presence of the light-streak as a useful and important sign in the differential diagnosis between troubles in the superlying media, especially in the vitreous, and haziness in the retina itself.

In some cases of overworked eyes, where there has been no other ophthalmoscopic sign, I have often noticed a decided diminution in the brilliancy and size of the light-streak, or

even a total want of it, especially in the veins. I have attributed this to some slight impediment in the circulation and a consequent transudation of serum into the perivascular spaces or tissue immediately surrounding the vessels. I have seen precisely the same thing in patients who have been suffering from some affection of the heart, though I have never been able to trace this, as Becker does, to the single condition of aortic insufficiency. Nor have I attributed, as he does, this reduction in size and brilliancy to the reduced calibre of the vessel; for I have seen cases where the light-streak was entirely absent, even where the vessels were abnormally distended, and I have then thought it due to the abnormal condition of the blood, or the wall of the vessel or surrounding tissue which interferes with their usual transparency.

I have noticed, too, this disappearance of the light-streak in one or two instances of what afterward proved to be the commencing of separation of the retina several days before the actual separation took place; the separation corresponding pretty nearly to the tracts of the retina where the light-streak was absent. In one of these cases the retina readjusted itself and remained applied for some three weeks, and then finally gave way. In another case where the line of demarcation, between where the light-streak was present and where it was not, in all the lower vessels, was well marked, and where too there was a corresponding limitation of the field of vision, no separation of the retina took place, and the œdema around the vessels, or what was supposed to be such from the absence of the light-streak, gradually passed off. In actual separation of the retina, the light-streak is wanting. I have also observed that the light-streak is absent, in different degrees, however, in many conditions in which the vessels themselves seem to have suffered from inflammatory action, especially in perivasculitis, or perhaps inflammation of the wall itself, and where the secondary atrophy of the tissue has taken place, with hypertrophy of the connective-tissue elements. Thus the effect is often very pronounced in the secondary or atrophic stage of retinitis albuminuria in those cases where the vessels themselves seem to have been involved, and finally to have become reduced slightly in size. In these cases the light-streak is often very much diminished, or even entirely wanting.

Precisely the same thing takes place in some cases of retinitis pigmentosa, and oftentimes in the earlier stages of the disease where the vessels are just beginning to suffer a reduction in size, and where, as yet, the accumulation of pigment in the retina has not taken place to any considerable degree, or even where this is entirely wanting. And, moreover, in these cases where the light-streak is absent it is not universally so, that is, in all parts of the fundus; for it may still be present in all its normal dimensions and brilliancy in some places, while in others it is much reduced or even wholly absent.

Exactly the same thing often occurs in those curious cases of retino-choroidal atrophy, occurring especially in old people with atheromatous arteries, and where, in different parts of the fundus, but usually near the macula, well-defined regions exist which show an absorption of the choroidal epithelium, capillary layer, and pigment of the stroma, to such a degree that the larger vessels seem to be dissected out, and to stand in vivid contrast with the adjoining parts of the fundus which still preserve a normal appearance.

I would say here that I do not allude at all to the well-known atrophic patches seen in choroiditis disseminata or areolaris, where the retina itself is not usually much affected, but to that condition which Jaeger has described (and of which he has given two admirable drawings¹) as atrophy of the pigment-layer of the choroid.

It would appear that this diagnosis is not correct, or at least not comprehensive enough, since simple atrophy of the choroidal pigment-layer never, in itself, produces any great disturbance in vision, as we see in posterior staphyloma, where not only the pigment-layer, but also the entire choroidal tissue, has been absorbed. And in all these cases of ordinary choroidal disease we very rarely, if ever, see scotoma, never, in fact, unless the retina is affected. But in the cases to which I allude, and in those which Jaeger has figured, we find great disturbances of vision and well-marked scotoma, showing that the retina is implicated, and it is in such cases that directly over and in the immediate vicinity of these circumscribed patches the light-streak of the retinal vessels is often

¹ "Hand-Atlas," table xxii., figure 97, text-page 165.

completely wanting. Through the kindness of Dr. Althof, I was enabled to present a beautifully-marked example of this at the last meeting of the New York Ophthalmological Society. In this case, that of an old woman of some seventy years, the light-streak could be seen perfectly well in some places, while in those parts of the fundus corresponding to the atrophic condition of the patches it was either very much diminished, or entirely wanting.

I have also seen this want of the light-streak in some cases, chiefly among old people, where there was no other ophthalmoscopic sign, but where, from other symptoms, there was reason to believe that the vessels of the general circulation were more or less affected with atheromatous or amyloid degeneration. So, too, in cases of what looks like simple atrophy of the disk, with shallow excavation, I have noticed this diminution or want of the light-streak, and a closer inspection there always reveals the fact that the fundus has a slightly hazy appearance, with delicate changes in the choroid. And I have been led to believe in such cases that the retina itself was affected, and that the nerve-fibre layer especially participated in the trouble which was so plainly marked in the united nerve-bundles in the disk.

Whether in the foregoing and similar cases the above-mentioned condition of the light-streak be due to an abnormal thickening of the vessel-wall itself, with reduction of its calibre, or to thickening of the adventitia, or to a slightly œdematous condition of the tissue immediately surrounding the vessel, I am unable to determine, but I believe that at times it is due to all or any of them.

I would add that the light-streak is often of great service in determining the optical condition of the eye, especially in astigmatism, and also in the differential diagnosis between that want of sharp definition caused by an optical error, and the same effect caused by some abnormality in the same condition of the membranes at the bottom of the eye.

ART. IV.—*A Case of Hæmorrhage from the Internal Carotid Artery treated successfully by the Ligature.* By H. B. SANDS, M. D., Surgeon to the Bellevue and the Roosevelt Hospitals, etc.

THE following case is believed to be unique, and to constitute an important contribution to the annals of operative surgery.

On October 22, 1872, I performed disarticulation of the left half of the lower jaw, on account of a malignant scirrhus tumor, occurring in a gentleman, fifty-three years of age, and developed chiefly on the inner aspect of the ramus and body of the bone, near the angle. The usual incision having been made, the jaw was divided on the left of the median line, through the socket of the corresponding canine tooth. The bone was then forcibly everted, while I quickly severed, by means of a pair of stout scissors, the soft parts covering the internal surface of the tumor, and then completed the disarticulation. Copious arterial hæmorrhage, checked temporarily by the pressure of the left forefinger, attended this manœuvre, and, on subsequent examination of the tumor, there were found running through it an inch of the trunk of the external carotid artery, and portions of about equal length of the digastric muscle and the hypoglossal nerve. These parts were necessarily divided and removed, together with the tumor. The external carotid, together with some smaller arterial vessels, having been tied, I was about to close the wound, when free venous bleeding took place from a small opening that I had accidentally made in the internal jugular vein. After some reflection as to the best course to pursue, I seized the margins of the wound in the vein, and applied a lateral ligature, not occluding the calibre of the vessel. The wound was then closed by sutures, except at its middle part, where an opening, half an inch long, was left for the exit of the ligatures. During the operation it was noticed that the upper part of the common carotid, and the internal carotid artery, from its origin to the base of the skull, were exposed, and could be seen pulsating at the bottom of the wound.

On the tenth day after the operation, at ten o'clock in the

evening, while my partner, Dr. Curtis, was engaged in cleaning the wound, a sudden escape of blood took place, both from the external opening and through the mouth. Dr. Curtis at once compressed the common carotid with the left hand, and, ripping open the upper end of the original incision, passed in two fingers of the right hand, and made pressure over the line of the internal carotid. The hæmorrhage ceased at once, about two ounces of blood having been lost, whose color gave no certain indication of the source of the bleeding. Pressure was successfully maintained until my arrival, at the end of about half an hour. It was then found that one of the upper two fingers covered the bleeding point, which was evidently above the carotid bifurcation, and Dr. Curtis was relieved by my pupil, Mr. Shafter. The ligatures were then examined, and that on the internal jugular vein identified and found to be attached far below the bleeding point. No ligature could be identified as belonging to the external carotid artery. After looking at the ligatures, I, without giving ether, prolonged the opening in the neck downward along the anterior edge of the sterno-mastoid muscle, and endeavored to reach the common carotid high up. Owing to the altered condition of the parts, this proved impracticable; so, having divided the omo-hyoid muscle, I exposed the artery just below it, where the tissues were normal, and passed, without tightening it, a ligature.

The common carotid was then compressed between the ligature and the finger, and pressure relaxed upon the bleeding point. A very vigorous spurt of blood followed, and pressure was resumed.

An examination of the surface, immediately above the seat of hæmorrhage, revealed a very soft pulsation, just beneath the granulations along the line of the internal carotid. The latter vessel I directed Dr. Curtis to dissect, while I controlled the bleeding. The internal carotid was exposed by scratching through the condensed tissues with the point of a grooved steel director; a ligature was passed, and was immediately tightened, as was just afterward the one encircling the common carotid. I then lifted my finger from the bleeding point, and no gush followed, but a bleeding continuous in character,

and small in amount. This was easily controlled by pressure just below the opening, and for the first time the exact seat and nature of the latter were completely open to inspection. The blood was found to come from a small, circular, clean-cut ulceration in the side of the internal carotid artery, situated an inch below the upper ligature, and the same distance above the upper border of the thyroid cartilage. Through this opening, the white and glistening surface of the inner coat of the opposite side of the arterial wall was distinctly visible. After ascertaining the opening to be in the side of the internal carotid, I readily exposed this vessel two or three lines below the opening, and applied a ligature, thus cutting off the source of the trifling hæmorrhage which had persisted after the tightening of the first two ligatures. This hæmorrhage must have been caused by the recurrent circulation through branches springing from the stump of the external carotid. The lower portion of the wound was then closed by a few silk sutures, and the rest lightly filled with dry lint.

The operation, which lasted about two hours, was wonderfully well borne, the patient making no complaint. He lost altogether, both during the operation and the antecedent hæmorrhage, not more than four or five ounces of blood, and the pulse continued firm throughout. Milk and iced brandy were administered through the night, and the patient obtained sleep without anodynes.

The subsequent progress of the case was eminently satisfactory. The two ligatures on the internal carotid separated on the ninth day, that of the common carotid on the fourteenth day, and that of the internal jugular vein on the seventeenth day after their application. The upper ligature on the internal carotid had in its noose an offensive white slough of the artery, three-eighths of an inch long, and another hæmorrhage was feared. None occurred, however, and the patient recovered completely without any further unpleasant symptoms.

Remarks.—Lesions of the internal carotid are usually so rapidly fatal, that no opportunity is afforded for surgical treatment. But, even when the surgeon interferes, success is not generally attainable, and, so far as I have been able to ascertain, there is only one other example of recovery recorded

besides the one herewith reported. This case occurred in 1807, in the practice of Dr. Twitchell, of Keene, N. H., and, in many respects, it resembled my own. The hæmorrhage was secondary, and took place, ten days after a gunshot injury, while Dr. Twitchell was in the patient's house. He applied a ligature on the cardiac side of the opening in the wall of the internal carotid, but was obliged to check the recurrent hæmorrhage by means of a graduated compress, as the opening was in that part of the artery which lies just beneath the base of the skull.

From various sources, I have collected the following instances of hæmorrhage from the internal carotid. Some were treated, and others were not, while all terminated fatally:

1. A hunter received a penetrating bullet-wound of the face. Hæmorrhage occurred on the third day, after the administration of an emetic. Death took place on the fourth day, during an attempt to tie the common carotid. At the autopsy, the ball was found lying behind this vessel, opposite the bifurcation. The internal carotid showed a longitudinal rent one-fourth of an inch in length.

2. Abernethy tied the common carotid for hæmorrhage from a wound of the neck inflicted by a cow's horn. The patient died thirty hours after the operation, with symptoms of hemiplegia. At the *post-mortem* operation, the facial, lingual, superior thyroid, and internal carotid arteries were found torn.

3. Langenbeck tied the common carotid for hæmorrhage from the internal carotid caused by the ulceration of an epithelial cancer. Death occurred soon after the operation, and an ulcer, not larger than the head of a pin, was found in the coats of the internal carotid.

4. A. Smith ligated the common carotid for hæmorrhage from the internal carotid, caused by a phagedenic ulcer of the tonsil. The patient died in six hours.

5. In the "Medical and Surgical History of the War of the Rebellion" a case is reported in which the common carotid was tied for hæmorrhage from the internal carotid, caused by a gunshot-wound. The hæmorrhage recurred and carried off the patient.

6. Baizeau tied the common carotid for hæmorrhage from the internal carotid, caused by disease of the ear. The bleeding was not arrested, and proved fatal on the third day. At the autopsy an opening was found in the internal carotid, produced by caries of the walls of the tympanum.

7. Broca performed an operation, like the one last described, and with a fatal result due to hæmorrhage.

8. Billroth, in a case of hæmorrhage from the right ear, due to ulceration of the internal carotid, tied the right common carotid, and, a fortnight subsequently, the left common carotid. Death from hæmorrhage occurred two days after the last operation.

9. Dupuytren reports the case of a man who received a perforating bullet-wound of the neck, at the level of the inferior maxilla. Hæmorrhage, which pressure failed to arrest, occurred on the tenth day, and proved fatal on the twelfth day. At the autopsy a wound, one-half an inch in length, was discovered in the internal carotid, two inches above its point of origin. *

10. Heyfelder relates that a soldier received a penetrating wound of the left side of the neck, and died of hæmorrhage eight hours after the injury. Ice-bags were the only means employed to check the bleeding. The internal carotid was found to be almost completely divided, three and a half lines above its origin.

11. Beclard states that a traveling charlatan wounded the internal carotid while attempting to excise an enlarged tonsil. The operator fled, and Beclard was summoned just in time to see the patient die from hæmorrhage. A wound of the internal carotid was found *post mortem*.

In some of the cases above mentioned, namely, those in which the hæmorrhage was due to disease of the petrous bone, the application of a ligature on the distal side of the arterial lesion was impossible, and the case that I have reported is the only one, so far as I am aware, in which a lesion of the internal carotid has been treated by the application of a double ligature to the injured vessel, one on the proximal, and the other on the distal side of the bleeding-point. The result affords additional evidence of the soundness of the rule laid

down by Mr. Guthrie—a rule which is too often neglected, as is shown by the surgical reports of the late civil war, even at the present day. It is not, perhaps, difficult to explain why a surgical maxim, so generally admitted to be binding, should be so often disregarded. The application of a double ligature to the bleeding vessel is simple in principle, but generally difficult and sometimes impossible in practice. The deep situation of the bleeding vessel, its relation to other important parts, and, in cases of secondary hæmorrhage, the infiltration of the surrounding textures with inflammatory products, offer serious, and sometimes insuperable obstacles to the application of a double ligature near the opening in the arterial walls. In these circumstances, the temptation to apply a simple ligature to the main trunk is very great, and experience shows that this operation, either alone, or, as in Dr. Twitchell's case, in conjunction with pressure, may sometimes insure the desired result. Yet success in such an operation can never be expected, and the surgeon should in no case perform it except as a last resort, and after an attempt has been fairly made to apply a double ligature according to the rule admitted by nearly every surgical writer as imperative. In the present case it is plainly evident that, unless the ligature had been applied above as well as below the bleeding-point, death from hæmorrhage would have rapidly and inevitably followed, as it was noticed that the simple interruption of the circulation through the common carotid produced no appreciable diminution in the violence of the bleeding, which, however, ceased almost entirely when a ligature was applied to the internal carotid beneath the base of the skull. The slight recurrent hæmorrhage still going on was controlled by the third ligature, placed just below the bleeding-point. This ligature I should have applied at first, instead of tying the primitive carotid, had the state of the parts rendered the requisite dissection practicable.

Finally, it may be interesting to note the success which attended the application of a lateral ligature to the internal jugular vein. In spite of the weight of authority in favor of treating wounds of large veins by the use of a double ligature, completely surrounding the vein above and below the bleeding

point, I am strongly inclined, if the wound be small, to trust to a single ligature, applied laterally, so as to include merely the edges of the wound, and not to interrupt the current of blood through the injured vessel. In case the wound were of large size, however, I should then regard the complete ligature of the vein as affording the best guarantee of success.

ART. V.—*Ligature of the External and Internal Carotids, for Hæmorrhages of the Face and Neck, and into the Mouth and Fauces.* By STEPHEN SMITH, M. D., Surgeon to Bellevue Hospital.

THE treatment of hæmorrhages in the region of the face and neck, and into the mouth and fauces, not amenable to control by pressure or the ligature of the bleeding vessels at the seat of lesion, has given rise to much discussion and a variety of operations. The first operation which suggests itself is ligature of the common carotid. This operation has long been practised, but with varying degrees of success. In three ways it has proved a failure: 1. As the artery wounded is usually a branch of the external carotid, owing the return circulation through the arteries at the base of the brain to the internal carotid, thence to the external carotid and its branches, renewal of the hæmorrhage has not unfrequently occurred. 2. Secondary hæmorrhage may follow separation of the ligature from the common carotid. 3. Fatal cerebral disturbance may follow ligature of the common carotid; according to Piltz it occurred in more than one-third of the cases. During the late war seventy-eight per cent. of the cases of ligature of the common carotid, performed on account of gunshot-wounds of the face or of the neck, proved fatal ("Medical and Surgical History of the War of the Rebellion"). These statistics emphasize the results which appear in Piltz's and Le Fort's collections. It is evident, therefore, that ligature of the common carotid, for this class of cases, is a very unsatisfactory operation.

A second operation is ligature of the common and external carotids. The external carotid is included, to prevent the

return circulation through the internal carotid. In this case the common carotid is ligated, in the belief that the external carotid will not otherwise become closed. This operation effectually prevents further hæmorrhage from the wound, but incurs all the risks which attend the ligature of the common carotid.

A third operation is ligature of the common and internal carotids, as performed by Buck. This operation does not differ in its results from the second noticed.

A fourth operation is ligature of the external carotid alone. Hitherto surgeons have been so much in doubt about the success of applying a ligature to this artery, owing to its numerous branches, that few have applied a ligature to its trunk without the precaution of ligating the common carotid also. The operation has, however, been performed, from time to time, with remarkable success, and the collected cases given by Dr. Longworth ("Archives of Scientific and Practical Medicine," No. 5) demonstrate very conclusively the practical value of this operation, especially when performed above the digastric muscle. In thirty-one cases there was but a single death. This collection does not include the cases of ligation of the external carotid for wounds and injuries of the face, reported in the "Medical and Surgical History of the War of the Rebellion," where we find that out of six cases four recovered.

I had occasion, many years ago (1864), to treat a patient suffering from extensive cancerous disease of the face, mouth, and fauces, which was attended with a hæmorrhage quite beyond control by pressure or other local measures. The ligature of the common carotid seemed a proper operation, both to prevent further hæmorrhage, and also to delay the progress of the growth. Fearing a renewal of the hæmorrhage by the returned circulation, and also a possible secondary hæmorrhage from ligature of the main trunk, I was led, in the few moments allowed for deliberation, to adopt an operation which I believed would accomplish the purpose without the dangers of the old operation. This operation consisted in applying ligatures to the external and internal carotids, just above the bifurcation of the common trunk. The operation was easily

performed, the ligatures separated in the usual time, no more hæmorrhages occurred, and there was a temporary suspension of the growth, with a tendency to cicatrize at some points. No cerebral symptoms were at any time present. The patient died several months after, from extension of the disease, but I was unable to obtain an autopsy.

It occurred to me at the moment that, by the ligature of the two branches, there would be less liability to secondary hæmorrhage than if ligatures were applied to the common trunk and to one of the branches. What was the precise method of cure in this case was not ascertained. No branches of the external carotid were brought into view in the operation, and it is to be inferred that the superior thyroid and lingual arose at a point admitting of ligature to the trunk of the external carotid below them. So far as external examination could be relied on, the closure of the common carotid at its bifurcation was complete.

The success of this operation induced me to repeat it recently in a case of sloughing wounds of the side of the tongue and fauces following a pistol-shot. The patient had attempted suicide by discharging a pistol into his open mouth. The ball traversed the left side of the tongue, grazed the tonsil, and lodged under the skin of the back of the neck. After several days the wounds assumed a sloughing condition, and hæmorrhage occurred at several points.

At first it was controlled by pressure and styptics, but at length it became so profuse and unmanageable that I proceeded to ligate the external and internal carotids just above their origins. No branch of the external carotid was seen. No further hæmorrhage occurred, nor were there cerebral or other unfavorable symptoms; the ligatures separated on the thirteenth day, but the wounds did not finally close in two months.

One feature in this case is of interest, and that is, the continued pulsation of the common carotid up to its bifurcation. At first this symptom was believed to be due to the impulse of the current from below, but in time it became apparent that there was a continuous current throughout the common trunk, and beyond the bifurcation nearly in the direction of

the internal branch. This pulsation was not communicated from below, but had all the characteristics of a regular pulse due to a flow of blood. This peculiarity may have been the result of a current of blood through the ascending pharyngeal branch arising at the bifurcation. It did not, however, prevent the successful closure of the arteries.

These cases demonstrate not only the safety of the simultaneous ligature of the external and internal carotids at their origins, so far as relates to their obliteration, but also the success of the operation in controlling hæmorrhages from many different points in the region of the face. This latter conclusion is doubted by Berard and others, who prefer ligature of the common carotid with the branch from which the hæmorrhage occurs.

This operation would not, of course, supersede ligature of the external carotid in cases in which ligature of that artery at a safe point, as above the digastric muscle, would control the hæmorrhage. It could only be preferred in those cases of hæmorrhage from extensive surfaces, or many different points, which have hitherto involved ligature of the common carotid.

Clinical Records from Private and Hospital Practice.

I.—*Case of Cancer of Rectum—Lumbar Colotomy.* By J.

II. POOLEY, M. D., Yonkers, N. Y.

I HAVE just been reading Dr. Erskine Mason's article on lumbar colotomy, in the October number of the *American Journal of the Medical Sciences*, and, to my great surprise, find it stated in that interesting and valuable paper that only thirteen cases of this operation have been reported by American surgeons, of which, six, or nearly half, are by Dr. Mason himself, and one by a practitioner of this county—Dr. Z. E. Lewis, of West Farms.

This is a sufficient reason, aside from any interest in the case itself, for adding the following to the American statistics

of this operation, which, notwithstanding all that has been done for it by English surgeons, seems not yet to be properly appreciated in our own country :

On Thursday, March 6, 1873, I was asked about 10 o'clock in the morning, in consultation with a neighboring physician, to see Mrs. M., who was said to have obstruction of the bowels.

I found her to be an intelligent Irishwoman, fifty-two years of age, the mother of eight children. For three years past she had been suffering from constipation of the bowels, worse at intervals, but always severe; her motions were small when formed at all, and occasionally flattened or tape-like; she had pain after an evacuation, and frequently at other times, which was referred mainly to the sacrum and inguinal regions. Eighteen months since, she went to a doctor in New York, who, she says, told her she had piles, and applied caustic. This treatment did her no good; her constipation steadily increased, and, a little more than a month before the present attack, she had complete obstruction, for which she was attended by her present physician, and, after much difficulty, relieved by cathartics.

The attack for which I was consulted began three weeks since, during which time she has had no passage whatever from her bowels, though cathartics and injections have been perseveringly and somewhat heroically used; she is becoming alarmed, and her sufferings from pain and distention are increasing very much and very rapidly.

She has no fever, and, though thin and worn, with anxious, suffering facies, no appearance of what can be called a cancerous cachexia; her tongue is clean, her pulse 100 per minute, of fair strength and volume; she has not much appetite, and, moreover, will not eat all she does want, from fear, to use her own expression, of what is to become of it if she does; she has considerable thirst, and some vomiting, for which she drinks carbonic-acid water, with relief to both symptoms. For the last day or two the use of cathartics has been suspended, and anodynes substituted therefor.

Her abdomen is very tympanitic, being so much distended with flatus as to push up the diaphragm and embarrass respira-

tion somewhat ; it has a marked drum-like resonance everywhere except quite at the bottom ; along the flanks and over the liver, which seems to be enlarged, there is no fluctuation ; examination by palpation unsatisfactory, from distention and the pain to which deep pressure gives rise. She has severe paroxysmal pains in the belly, of a forcing character, which she compares to those of labor, and a constant and most distressing feeling of distention.

Upon proceeding to examine the rectum, the skin of the buttocks on each side of the anus, for some distance, is of a brownish-red discoloration, and is the seat of a diffused brawny induration.

Sphincter, there is none, but the anus is a large, rigid, patulous orifice, with ragged, ulcerated edges ; when she lies on her side, and a candle is held in the proper position, by raising the buttock we can look up the rectum for several inches into a perfectly rigid and open canal, the walls of which throughout are covered with a gray sloughy ulceration. Upon introducing the finger, the walls of the rectum are found to be excessively hard, and at the distance of about three inches it is arrested by a stricture composed of the same indurated tissue, which no force which it was deemed safe to use can enter, much less pass ; the examination gave rise to slight bleeding, and the discharge that covered the finger had a fetid, nauseous odor, without any admixture of the feculent.

The walls of the vagina were found to be indurated, but not ulcerated ; the uterus appeared to be healthy, but was fixed in the pelvis. As she says she passes no water, a catheter was introduced, but very little urine obtained ; a fistulous communication between the rectum and the bladder was suspected, but could not be verified.

The examination, though quite protracted, gave scarcely any pain. No information of any cancerous disease in any of the ancestry, or of the collateral branches, could be obtained from this woman or her family, who were unusually intelligent for persons in their station in life.

I expressed my opinion that we had to deal with cancerous stricture of the rectum, and proposed, as the most feasible means of relief, the operation of lumbar colotomy.

The physician in attendance, not being fully prepared to accept this proposition, it was agreed that we should meet again the following morning, and add Dr. Jenkins to the consultation; this was accordingly done, and, as he unhesitatingly indorsed both my diagnosis and recommendation of colotomy, the family physician acquiesced, and we explained to the family what was, and what was not, to be expected of the operation, together with its possible dangers; they agreed to it: the patient herself was anxious to have it performed, and very hopeful as to the result. Accordingly, at half-past three o'clock the same afternoon—March 7th—I performed the operation, assisted by Drs. Jenkins and Balch, in the presence of a number of medical gentlemen.

The patient was etherized in her bed, before being placed on the operating-table, prepared in another room. Previous to placing her in the necessary position, the disease was examined by those present, and found to be even more extensive than at first supposed.

Turning her over on her abdomen with the right side lowest, and the left loin made prominent by a firm pillow placed underneath it, I marked a point on the crest of the ilium midway between the anterior and posterior superior spinous processes, and made a transverse incision, four inches long, midway between the crest of the ilium and the left rib, its centre corresponding to the point already marked out on the iliac crest. After dividing the integument, the succeeding layers of muscle and fascia were divided on a director, and, so spare was the patient, that not a particle of fat was seen until we came down upon the deep fascia lumborum, when several globules of fat made their appearance in the line of incision, and somewhat obscured our view; they were nipped off with scissors; the fascia was then divided, and the colon, distended with gas and fæces, bulged into the wound. Two stout ligatures were then passed through the intestine, about an inch and a half apart, and given into the hands of an assistant with directions to draw the gut well forward into the wound; an incision was then made into it, corresponding in size to the space between the ligatures, and immediately flatus, with an immense quantity of semi-fluid, dark-colored, offensive fæces

made its exit and continued pouring out for several minutes; when the flow had somewhat subsided, the ligatures, which had been armed with a needle at each end for that purpose, were passed through the integument on either side, above and below, and tied. Several other points of interrupted suture were introduced, fastening the gut securely to the skin, and a compress and bandage applied. The operation, which was done very deliberately, lasted three-quarters of an hour; there was scarcely any blood lost.

When visited the same evening, the patient was found very comfortable, not quite recovered from the effect of the ether; fæces, similar to those observed at the operation, still discharging freely from the wound.

March 8th, A. M.—Patient complaining a good deal of pain in the sacrum, expresses strongly her sense of relief from pain in the abdomen, and the feeling of distention which had been so distressing before; pulse 90; no fever; fæces still escaping from the wound.

Afternoon.—No perceptible change since last visit, except that the patient seems dull and stupid, and either unable or unwilling to answer many questions.

Evening.—About the same, still quite stupid; does not take nourishment satisfactorily, in fact takes hardly any at all.

9th.—Has had a bad night; has not been awake, but very restless, and groaning, apparently with pain; this morning her face, in addition to dullness, has a changed and sunken appearance; pulse not frequent, but very feeble; it is almost impossible to get her to answer more than on one or two questions consecutively, but her answers when given are perfectly rational and to the point. Fæces still discharging from the wound, but in less quantity; she refuses all nourishment, complains of pain in the sacrum and rectum: ordered suppositories of belladonna and morphine, and urged attention to nourishment.

She continued to sink slowly during the day, becoming quite free from pain, and died quietly and easily at 5 P. M., a little more than forty-eight hours after the operation.

The relatives would not allow a *post-mortem* examination to be made.

Notwithstanding the death of the patient, I think the operation in this case was not only justifiable but strongly indicated. It promoted euthanasia more effectually than the whole repertory of narcotics would have done, and she died quietly and easily, having been freed for many hours from the horrible pains of distention which were rapidly increasing, and constituted by far the most dreadful of her previous sufferings.

That she died after the operation, even as soon as she did, cannot be wondered at when we recall the fact that for three weeks previously there had been absolute occlusion of the bowels, and that powerful cathartics had been repeatedly and obstinately administered; it is not too much to say that, had the operation been performed two weeks earlier, it would probably have secured to this poor woman a month or more of life with comparative comfort.

It is this miserable delay, this waiting till the *last* minute, that above every thing else stands in the way of the proper appreciation of this operation, and which practical surgeons and writers should unite to overcome; the same spirit of procrastination too often also throws discredit upon tracheotomy, herniotomy, and other of the life-saving operations of surgery.

In addition to its value in prolonging life and relieving pain, we cannot doubt that the operation we are considering has a useful future before it as a directly curative expedient, in many cases of ulcerated and strictured rectum, where the constant irritation of passing fæces and an irritable and irritated sphincter are the great hinderances to the curative efforts of either Nature or art. Why it should be considered more unphilosophical or unsurgical to secure absolute physiological rest for the rectum by colotomy than for joints by extension, or the bladder by establishing a vesical fistula, I for one cannot understand.

With regard to the operation itself, in a thin patient like mine, nothing can well be easier; and, though I can well un-

derstand how, under other circumstances, difficulties may arise, they are nothing but what a cool, deliberate mode of operating with attention to rules will easily overcome.

In my case I practised the transverse incision, which seems to be most universally applicable, though particular circumstances may make a curved incision or any other form preferable in a given case.

Mr. Maunder says ("Operative Surgery," p. 286), "The author, having performed the operation nine times, prefers the *transverse* incision."

I will add here an outline of a case which seems to have escaped Dr. Mason's search, thorough as that has been. I find it in Günther's "Lehr von den blutigen Operationen am menschlichen Körper," vierte Abtheilung, page 14, where it stands No. 34, in his enumeration of cases, and said to have been by Humphreys in 1856; though what Humphreys or from what source the account is derived we are not informed. The case was that of an emaciated woman, sixty-three years of age, who had had no passage for ten days. All other treatment proving ineffectual, lumbar colotomy was performed with relief to the prominent symptoms, and she died on the fifteenth day; *post mortem* showed the obstruction to have arisen from a cancerous tumor pressing upon the sigmoid flexure.

NOTE.—Amussat seems to have been, to quite a singular extent, the subject of misstatement and misunderstanding, for not only have Allingham and others stated that he never performed the operation that bears his name, a mistake that Dr. Mason has corrected, but Mr. Erichsen said some time ago, at a public discussion, that it had never been performed in the case of an imperforate child, whereas Amussat himself performed it twice, and Baudelocque once, under such circumstances.

Quite recently I have noticed in the medical journals, as an original proposition credited to Verneuil, I think, the proposal to excise the coccyx to facilitate explorations in the perinæum in cases of imperforate anus; the fact is, that Amussat, in one of his operations, suggested, and partially carried out this very procedure. Strange that, in one single department, so famous a man should be the victim of so much misapprehension and injustice!

Case of Painful Enlargement of Testicle retained in the Inguinal Canal; Removal. By J. H. POOLEY, M. D.,
Yonkers, N. Y.

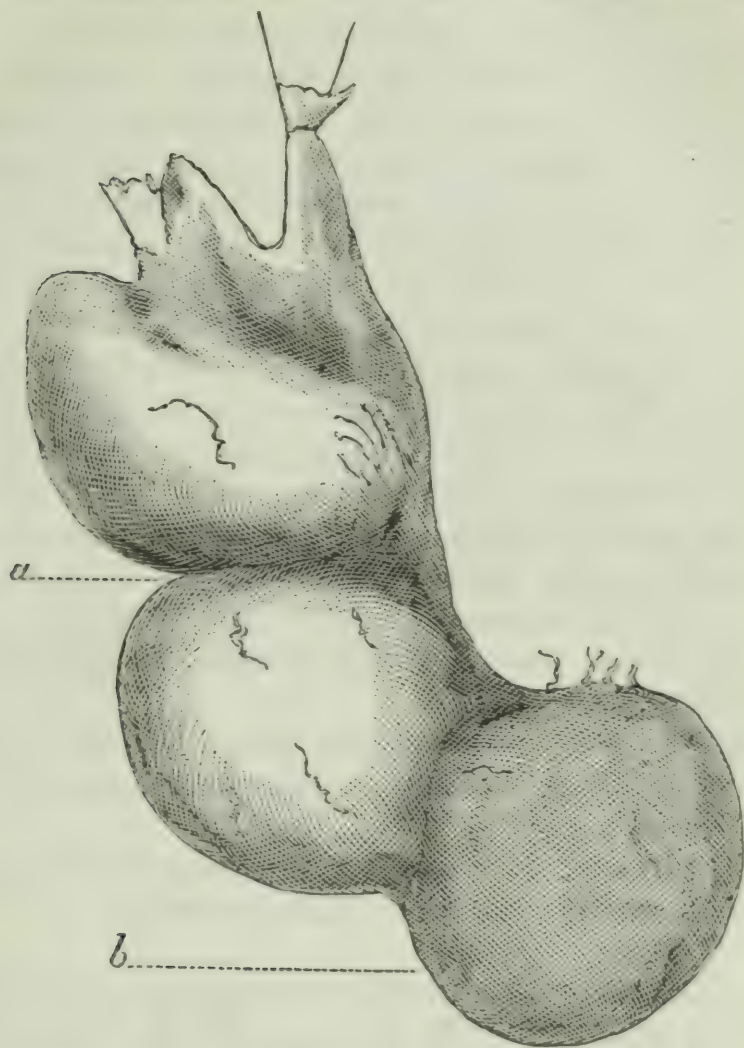
MR. B., a Scotchman, aged sixty years, was referred to me, by another practitioner, for retention of urine caused by enlarged prostate. He mentioned to me at the time that he had something the matter with one of his testicles, but no attention was paid to it then. When he got over his urinary trouble, or, rather, some time afterward, he again directed my attention to his testicle, and gave the following account of it:

This testicle, the right one, had never been of normal size, in fact, no larger than a child's, and had never descended into the scrotum, but remained permanently in the inguinal canal, and the scrotum on that side was very slightly developed. This state of things had never given him any uneasiness, nor had he ever spoken to a doctor about it; but, just previous to the time when I first saw him for his prostatic difficulty, he began to have pain in it and noticed that it was enlarging. I found a firm tumor, I should say about the size of the small end of a hen's-egg, projecting from the external ring, the canal above being occupied by an indistinctly-defined swelling that could not well be made out.

Attached to the bottom of the firm tumor was a round swelling which gave a distinct sense of fluctuation; this I punctured, and let out an ounce or more of clear, transparent fluid, but the relations of the rest of the mass remained unaltered. I advised the removal of the entire growth, which was performed a week afterward, at which time the lower swelling was again filled with fluid. The operation was rendered rather tedious by numerous adhesions between the enlarged testicle and its sac.

As the cord had to be tied very high up, I ligatured the arteries respectively, and placed another round the whole cord as well. The wound united partially by first intention, the ligature came away in a week; in two weeks he was entirely well, and has remained so ever since, a period now of several months. The growth removed appeared to be simply an enlarged and inflamed testicle rendered excessively painful from its constrained position; about the middle of the tumor is a deep groove or sulcus produced by the presence of the external

ring, at the bottom an encysted hydrocele. The annexed woodcut gives an accurate idea of the form of the tumor, but



is only half the size: *a* represents the groove or sulcus referred to, and *b*, the encysted hydrocele.

II.—*Deformity of Extremities, caused by Congenital Arrest of Development.* By W. H. SHARP, M.D., Volcano, West Virginia.

THE subject of this deformity, A. D., female, one of twins, is two years old; at birth weighed six and a half pounds; her mate, a boy, seven and a half pounds. She presents the following malformations:

Right hand, the carpus and metacarpus appear perfect; the thumb perfect, except second joint is ankylosed, and is smaller than natural. First finger but little developed, being about one-third of the natural size; second finger more developed, but still is not as long as the third or fourth fingers, which are of a natural size; the last three are webbed as far as the second phalangeal articulation. The right foot shows the first, second, and third metatarsal lines undeveloped; the fourth and fifth developed, the foot ending in a sharp angle, the apex formed by these last; the arrest of development in both these being greatest on the inner side.

The left upper extremity is wanting of a hand, the arm ending in a fleshy pad at the wrist-joint, as if the hand had been amputated at that joint; the stump presents two nodular bodies, like rudimentary fingers.

In the left foot there is an entire absence of the metacarpal phalangeal part, the outer carpal bones being the most developed; the foot terminates in rather a sharp point at that side; the astragalus, os calcis, and scaphoid bones, appear to be well developed.

The lower left lateral incisor is absent, and the tongue at its extremity presents a notch or indentation opposite the site of the absent tooth.

There appears to be no other deformity about the child, and mentally she is more active than her brother.

Cystic Encephaloid of Ovary, occurring in a Child Eight Years of Age. By W. H. SHARP, M. D., Volcano, West Virginia.

The following notes of this interesting case were communicated to me by Dr. A. H. Thayer, of Grafton, West Virginia, he seeing the case in consultation with Dr. Harder, of Taylor County, W. Va. In August, 1872, Dr. Thayer was requested to see Susanna M. Hall, aged eight years, with the following history:

About March 1, 1872, there was a bloody discharge from the child's vagina, which the mother supposed to be catamenia.

There was in a few days a second discharge, attended with some pain in left inguinal region. On April 1, 1872, was an-

other discharge, accompanied with and followed by more pain in the same region. About May 1st a tumor about the size of an orange was observed in the left side, which continued to increase until the end of August, when Dr. Thayer saw her. The child was then quite emaciated; abdomen greatly distended, and the superficial veins enlarged; breathing quick; pulse 160. Countenance pinched and haggard, with a cachectic appearance. She complained of burning pain through the tumor. After making a thorough examination, Dr. Thayer diagnosed a malignant ovarian tumor.

On October 1, 1872, she died, and after some difficulty a *post-mortem* examination was obtained—present Drs. Thayer and Kennedy, of Grafton, and Harder, of Taylor County. The body was greatly emaciated, abdominal veins enlarged, tumor distended; skin tense and deeply ecchymosed over tumor. A longitudinal incision was made from ensiform cartilage to pubic symphysis. The abdominal cavity contained about a quart of dark-looking fluid. The tumor now exposed was found to occupy the space from the eighth rib to the lower part of the pelvis. Found that the adhesions posteriorly were so extensive that we were unable to remove it. The stomach was firmly adherent to the tumor. The liver was natural in size and appearance, but, on touching it, it broke down like jelly. The lungs were crowded into the upper part of the thorax; the heart situated beneath the right nipple. The uterus normal; the left Fallopian tube was six inches in length, and then lost in the lower part of the tumor.

On opening cyst, found the walls thick and tense, and containing over three gallons of dark fluid, mixed with a yellowish-white, brain-like substance. No microscopic examination made.

The case is interesting, from the situation of the disease—occurring in so young a subject—for, while cancer is oftentimes met with in children, yet the location in girls is most frequently, after the orbit, the labia. Another point is the first symptom which attracted attention, i. e., the appearance of a sanguinous discharge from the vagina. This is, in females after the meno-pause, the first or one of the first signs of malignant disease of the uterus. In a case under my observation

at present, of schirrus of the uterus in a woman aged sixty years, the return of sanguinous discharge from the vagina was the first symptom which attracted attention to the true locality of the disease, although there had been a gradual deterioration of the general health for some time. The only other case I remember to have seen recorded of disease of the ovary occurring in a child before age of puberty, was one of non-malignant cystic disease of the ovary in a girl twelve years of age, which was successfully removed by ovariectomy.

III.—*Forty Cases of Diphtheria treated by Local Application of Sulphate of Iron.* By A. W. NELSON, M. D., New London, Conn.

A STUDENT of Dr. W. W. Comstock of Middleboro, Mass. in 1859, the writer saw many cases, a few fatal, in an epidemic of diphtheria, in which good results were apparent from tincture of chloride of iron applied to tonsils and pharynx two or three times a day; given also internally in doses not now remembered.

At the Massachusetts College in Boston, about that time, professors, if I remember, advised against active local treatments; in the army, during the war soon after, medical men known to us held the like opinion.

About 1865, for chemical reasons, I became confident that some local treatment would best cure the disease, and often wondered what chemical reagent would destroy and counteract the source of fever, the putrid mucus—pseudo-membrane—continuously exuding, and at the same time not cauterize and irritate the still living although infiltrated membrane of the throat.

By expectant care this putrescent exudation is in part directly absorbed, doubtless in greater mass swallowed, to do possibly as much injury within the stomach.

Creosote suggested itself to be considered—this was just before the carbolic-acid discovery or invention—but it was not tested.

Another agent, the subsulphate of iron—Monsel's solution

—by some now forgotten way, was brought to notice. My first application to the throat in diphtheria determined with me its efficiency in this dreaded disease.

It is very like the application of tincture of iron of Dr. Comstock, and perhaps it was only going back to his skillful teachings.

In a case or two only since 1865 or early 1866 have I used partially tannin as substitute for the subsulphate, with a quick return to the latter.

In mild cases we used liq. ferri subsulphatis and pure water or glycerine in equal parts, or two to one of latter to former; in the severe disease the liq. ferri subsulphatis in its full strength.

For subsidiary gargles we have water, chlorate of potass solution, lime-water; all beneficial.

You will sometimes induce a little vomiting at first, an effect not injurious; on the contrary, possibly beneficial in ridding the stomach of poisonous mucus swallowed before.

The iron as a gargle is disagreeable, from blackening the teeth. It also will badly stain white clothes. These objections are best obviated by the large camel's-hair pencil, well washed after using. The teeth may also be washed.

In this subsulphate of iron locally and tincture of chloride internally, I only say, I used the former originally, probably not first, and that this use came from careful consideration of the chemical nature and necessities of the pharyngeal disease.

I subjoin all my cases since 1865, very briefly recorded.

CASES.

1865.—L. C. Williams, fifty years. Exudative pharyngitis. Tincture of chloride of iron internally, throat painted internally with same, not a severe case. Seen and treated January 14th, 15th, 16th, 17th, and 18th, five days.

1866.—Mrs. Seth W., aged fifty-five years. Tonsillitis, no abscess. Locally, liquor ferri subsulphate, treatment five days.

1867.— — Clark. Diphtheria. Tincture of chloride of iron internally, and gargle of subsulphate. December 3d, 4th, and 5th, three days' treatment.

Mrs. Glass. Diphtheria. Tincture of iron internally, sub

sulphate locally; treated December 12th, 13th, 14th, 16th, 18th, 19th, and 21st, seven visits in nine days Cured.

1868.—J. R.'s family. Diphtheria. Hygiene bad, six children, three to twenty-four years old, some very ill; seen March 5th, 6th, 7th, 8th, 10th, 11th, and 13th, seven visits in nine days. All recovered rapidly. Tincture of iron internally and subsulphate locally, full strength occasionally; no pain, only a very constricting feeling in the throat after the application.

1869.—January 23d, H. A. P. Follicular pharyngitis. Seen once. Liquor ferri subsulphatis applied to throat. Cure.

Mrs. Reardon and son. Diphtheria. Liquor ferri subsulphatis locally and tincture of iron internally; January 23d, 24th, 25th, and 26th, six visits, and recovery.

H. R., twenty-five years. Disease of throat, diphtheria(?). Monel's styptic locally applied; visited March 23d, 24th, 25th, and 26th, six times, and relieved. Given as noted on record-book.

B. II., twenty-one years. Diphtheria. No treatment recorded; doubtless, as in previous cases. One visit, and recovery, March 24th.

G. A., twenty-eight years. Quinsy and diphtheria. Liquor ferri subsulphatis locally. March 24th, 25th, 26th twice, 27th twice, 28th and 30th; eight visits in six days, and complete recovery; no abscess.

M. A. D., twenty years. Diphtheria. April 7th and 9th, three visits; treatment not recorded.

M., four years. Influenza and diphtheria after parotitis, etc.; December 3d, 4th twice, 5th twice, five visits in three days. Death. Liquor ferri subsulphatis locally, etc.

1870.—Mrs. J. McC. Diphtheria. Subsulphate and tincture of chloride; February 3d and 4th. Cure.

1871.—Miss R., fifty years. Pharyngitis. January 25th and 26th. Cure.

Ida W., nineteen years. Diphtheria, tonsils and uvula much infiltrated, and neck swollen outwardly. May 16th, 17th, 18th, 19th, 20th, and 21st, eight visits, and complete recovery; no sequences. Liquor subsulphatis locally, applied every four hours, and tincture of iron internally, twenty drops as often, except at night.

M. Pharyngitis. May 29th; subsulphate.

Infant. Diphtheria. Moribund; seen p. m., died before morning.

Miss S., twenty-one years. Diphtheria. June 30th, July 1st, 2d, 3d, 4th, 5th, 6th, and 7th, twelve visits in eight days. Recovery, no sequences. Subsulphate locally, and tincture of iron internally.

D., fifty years. Diphtheria. September 4th, 5th, and 6th, four visits, and recovery. Subsulphate locally, and tincture of iron internally.

1872.—Miss L., forty-eight years. Diphtheria. Not severe, but persistent. March 1st, 2d, 3d, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, and 15th. To the 10th with subsulphate, after that with tannin and glycerine. Twenty-one visits; recovery perfect. Pharynx was especially affected.

M., boy, three years. Scarlet fever and diphtheria. Croupous respiration. Not treated with subsulphate. Visited September 23d, 24th, 25th, 26th, and 27th. Death.

M., boy, six years—brother. Diphtheria. Subsulphate locally and tincture of iron, September 30th, October 1st, 2d, 3d, 4th, 5th, and 6th; subsulphate omitted October 3d, 4th, 5th, and 6th. He would not open his mouth. A severe and doubtful case. Recovery perfect.

Miss L., twenty-five years. Diphtheria. November 8th, 9th, 10th, 11th, and 12th, seven visits. Subsulphate and chloride. Recovery perfect. Treated in Hartford, not locally, in March after, for another attack, and preferred greatly the subsulphate.

Miss S., fifteen years. Pharyngitis. Subsulphate locally. October 17th, one visit.

1873.—Anna N., thirteen years. Diphtheria. Neck swollen externally on both sides; tonsils and uvula infiltrated and showing very much fetid exudation. March 9th, 10th, 11th, 12th, 13th, and 14th, twelve visits. Tincture ferri twenty drops, every four hours; subsulphate full strength, to internal throat. Teeth guarded by washing with lime-water, etc. Recovery slow, from great weakness. Speech for nearly a month a little imperfect, and a little faulty in swallowing. Final recovery complete.

John M., fifteen years. Diphtheria. May 1st, 2d, and 3d, four visits. Subsulphate locally, and chloride internally. Cure.

Mrs. M., mother. Diphtheria. May 12th, 13th, and 14th, four visits; perfect recovery, by same means.

Fred M., son of same family, seven years. June 8th, 9th, 10th, 11th, 12th, and 13th, three visits. Same treatment. A severe case. Recovery perfect and permanent.

Mrs. McC., and three children under twelve years. Slight cases. October 16th, 17th, and 28th, three visits. Subsulphate in weak solution. Recoveries perfect.

Kate T., twenty-two years. Diphtheria. Subsulphate and chloride. October 25th, 26th, 27th, and 28th, six visits. Perfect recovery.

Margaret C., eighteen years. Typhoid fever. Third week, pulse 105—fever not very severe. About November 1st, diphtheritic pharyngitis. Tannin ℥j, sugar-of-milk ℥jss, in powder, together for three days. No marked improvement. Then for two days Monsel's salt ℥j, sacch. lactis ℥ijj, together, in powder. A little on the posterior tongue. Improvement immediate. Patient now convalescent from fever.

These I find in brief records, which mean much more to me than they possibly can to another.

Every case of diphtheria is noted; also what are marked, only four, I think, as pharyngitis and tonsillitis, without abscess.

There are three deaths in the forty cases; about six cases may be omitted, from doubt as to their really diphtheritic character.

Of the three deaths, one case had no treatment; the infant seen once while moribund, 1871.

A second case was not treated locally with the subsulphate. Murphy, boy, three years old, ill from scarlatina and diphtheria with croupous respiration.

The third case is that of Martin, four years old. He had influenza and diphtheria after parotitis. Was treated locally. I was inclined to think this child had diphtheritic croup. Could obtain no autopsy.

Slight paralysis of the palate and speech followed in Anna

N., thirteen years old, 1873, in whom the primary disease was very serious. She soon regained her health and speech entirely.

In all my cases here reported since 1865, no other ailments have occurred as sequences.

IV.—*Case of Dactylitis Syphilitica.* By T. CURTIS SMITH, M. D., Middleport, Ohio.

ON January 13, 1872, I was called to the infirmary for the poor, to see a colored girl, aged nineteen years, of spare build, nervous temperament, and at that time greatly emaciated. She was suffering severely from constitutional syphilis. The pharynx was deeply ulcerated, mucous patches in the mouth, vomer and posterior part of the palate-bone eaten away, all giving off an offensive odor; the post-cervical and the inguinal glands indurated, and a profuse offensive vaginal discharge proceeding from extensive mucous ulcerations in that locality. She was also suffering greatly from pains in the sternum, scapula, and the shoulder, knee, and ankle joints. I also observed considerable enlargements of the metacarpo-phalangeal joints of the right index-finger and thumb. This swelling was firm but evidently not osseous, and was very painful on moving the joint or on pressure. The enlargement was evidently dactylitic in character, and suited well the description of that lesion as given by Dr. R. W. Taylor, of New York.¹ The proliferation of tissue in this instance seemed to have begun at the periosteum, and to affect the joint structures; and also the subcutaneous connective tissue was the seat, during the course of the lesion, of a deposit of gummatous structure. The enlargement at first was not very great, and arose from the osseous structure of the joint, but, as the enlargement increased, hard swelling of the subcutaneous connective structure, or a proliferation of tissue in the structure, seemed apparent.

As she was feeble and anæmic, I placed her on the use of mineral tonics with quinine, and mercury by injection. Also gave anodynes *pro re nata*. After two weeks there was evi-

¹ *American Journal of Syphilography and Dermatology*, for January, 1872.

dently some gain in strength, flesh, and appetite. Syphilitic symptoms unabated. The dactylitis was evidently on the increase, being by this time very well marked. I now added the use of hydr. proto. iod. and kali. iodat. as freely as could be borne by the stomach. This course was continued with slight variations for four months, during which little improvement occurred, except relief from pains and some gain of strength and flesh. At this date she contracted pleuro-pneumonia, from which, however, she recovered. After this the treatment was again resumed, and continued with only slight necessary changes in form, till February, 1873. Three months prior to that date there had been evident improvement both in her general symptoms and in the dactylitis, but the former were still troublesome, and the latter, though diminished, was still quite observable, since which date I have not seen the patient. This was one of those inveterate, intractable cases of syphilis that are not only incurable, but very difficult even to relieve.

She had received no treatment during the primary stage of the disease, nor even during the secondary, till the very latter part; hence, the disease had gone on without hinderance quite up to the time I first saw it. This case and one of congenital dactylitis syphilitica¹ are the only instances of this form of syphilitic lesion I have met with in a tolerably extended practice.

V.—*Case of Compound Fracture of Radius and Ulna, with Dislocation of the Elbow and Wrist Joints.* By PHILIP A. BISSELL, M. D., Mahanoy City, Pa.

SEPTEMBER 21, 1873, William Givney, aged about thirteen years, fell from the back of a mule, suffering a compound fracture of both bones of the forearm about two inches above the wrist-joint; fracture transverse, both bones protruding through the wound, the fractured end of the radius resting upon or crossing the ulna; the wound upon the inside of the

¹ *American Journal of Syphilography and Dermatology*, for January, 1872, p. 33

forearm; the lower ends of the radius and ulna were forced at a right angle with the arm; the hand dislocated at its carpal articulation, upward and backward; the dislocation of the elbow upward, the head of the radius resting upon the external condyle of the humerus, the olecranon resting upon the internal condyloid ridge, thus placing the condyles of the humerus between the radius and ulna. The arm nearly straight and supinated; no fracture to be detected at the elbow-joint; swelling and tumefaction. As far as could be ascertained, the external lateral, the anterior, and the annular ligaments, were torn from their attachments. Reduction of the elbow was effected by first making extension in a lateral direction, bringing the ulna *in situ* and *vice versa*, to effect reduction of the radius, requiring no small degree of force. Simultaneously with the reduction of the fracture, the dislocation of the hand was reduced. The fracture was dressed in the usual manner, with pasteboard splints and roller-bandage, leaving sufficient space to attend to the wound. Result—25th, both bones united, flexion good, extension only about two-thirds the amount necessary to bring the arm to a straight position; pronation and supination moderate, flexion and extension of the hand and fingers good.

I fear that extension of the forearm will never become perfect, owing to the injury of the muscles and ligaments of the elbow-joint. Should another injury of the kind occur in my practice, I should dress the arm in a straight position, making a moderate amount of motion daily, believing it would be better, owing to the injury sustained by the soft parts of the elbow-joint, than dressing it in the flexed position. My reason for this is obvious, as any surgeon will readily understand, yet it is a question, having never seen a case of the kind described by any of the writers with whom I am familiar, viz., Gross, Eriksen, Druitt, Pirrie, Chelius, Skey, or Hamilton. I am inclined to consider this an anomalous dislocation of the elbow, with a compound fracture of the radius and ulna, deeming it necessary to have a compound fracture of both the radius and ulna to produce dislocation of this kind: 1. To force the radius and ulna sufficiently apart, there must be a fracture of both bones to permit a sufficient amount of spreading of

the radius, and ulna at the elbow-joint to admit the condyles of the humerus between them. 2. Without a compound fracture the bones of the radius and ulna could not override one another at their fractured ends sufficiently to permit the head of the radius to rest upon the external condyle, and the olecranon to rest upon the internal condyloid ridge. If a similar injury is described, I should be pleased to know where and by whom.

VI.—*A Sprained Ankle treated by Manipulation, with Comments.* By WM. R. FISHER, M. D., New York.

ON the 19th of last June, Prof. T. G. Thomas sent a young woman to me, who gave the following history of her case: On September 5, 1872, she fell from the top of a high step-ladder and struck the floor upon both feet, in a standing position. The shock and pain together were so severe that she fainted at once. Dr. Metcalfe was called to see her, in the absence of Drs. Thomas and Walker, and prescribed the local application of ice, with other antiphlogistic treatment. Both ankles were painful and swollen, but the right was felt to be more seriously injured than the left, and time showed that this was really the case, for by the end of ten days the patient recovered the use of the left foot, and, with the aid of crutches, was able to undertake a journey from New York to her home on the coast of New Jersey. By the time she arrived there the swelling in her right foot and ankle had become greatly increased and the pain was intense; but a few days of rest, with cold applications, were sufficient to subdue this inflammatory exacerbation. During the following three months her foot improved slightly, the chief treatment having consisted in liberal applications of stimulating liniments, so that she was beginning to make a little use of it while walking upon her crutches; but, in going down-stairs one day, her right heel caught, she lost her balance, and fell down eight steps. The ankle at once became hot, swollen, and painful, and she felt that the little which had been gained since the original injury had been entirely lost by this unfortunate ac-

cident. The treatment which she received after this did not seem to accomplish much; and, becoming dissatisfied, she returned from the country to New York in January of the present year, and was placed under Dr. Henry F. Walker's charge. There was an immediate and decided improvement from the use of frictions with camphorated oil, and of the tincture of iodine, which he prescribed. The pain and swelling throughout the foot were diminished and motion increased somewhat at the ankle-joint; but this articulation remained weak and painful whenever use was attempted, and a point just below the external malleolus was exquisitely sensitive to pressure or upon motion. Still, with an effort, she could limp across the room without her crutches, though suffering a good deal of pain at each step. On the 5th of February, at Dr. Walker's suggestion, she entered one of our hospitals for further treatment. At first absolute rest in bed was enforced for two months; but when she got up at the end of this tedious confinement, although the swelling and pain had temporarily diminished, her foot and ankle proved to be as useless as before, and her general health had become decidedly impaired. Then galvanization was employed, and this was followed by repeated blisters, with some benefit as regards the pain; but still the efforts to use the limb in locomotion, which were attempted from time to time, invariably increased the swelling of the ankle and foot, and were attended by so much pain that they had to be abandoned. An attempt to master the difficulty by a uniform pressure with wet sponges had to be given up in less than twenty-four hours, on account of the unendurable pain which it produced. Meanwhile her health continued to suffer greatly from the combined influences of pain, disappointment, and confinement in a hospital ward. Her appetite was lost, her bowels became constipated, and she had neuralgic twinges in the right leg, darting up and down between the great-toe and the knee. All local treatment was abandoned by her physicians, and quinine, iron, and other remedies of a like nature, were prescribed. But, as nothing did any permanent good, she was finally set down as an hysterical girl, who might do much better in the way of getting well if she would. Finding that no improvement was likely to be

gained by a longer stay under general treatment, she left the hospital on the 17th of June, after a trial, of more than four months, of all the means which could be suggested for her cure, and with her mind made up to remain a cripple for life. In this plight she was once more sent by her friends to consult Dr. Walker, but, in his absence, Dr. Thomas examined her ankle, and sent her to me for treatment by manipulation.

She walked into the room upon crutches, using the left foot alone to receive her weight, but resting the right foot lightly upon the ground as she progressed. Her face and lips showed that she was markedly anæmic, although she was quite stout. Her expression was sad and beseeching. Upon examination, many marked differences between the foot and ankle on the two sides were evident. On the right there was an oedematous puffiness, which was sufficient to round off all the proper inequalities of outline in the foot, and almost to obliterate the malleoli. The foot had a bluish, dusky hue throughout, arising from a want of active circulation, and around the external malleolus there was a faint yellowish discoloration, like that which is left after an extravasation of blood in the cellular tissue. To the touch the temperature of the right leg and foot was much lower than that of the left, the difference being more marked from the knee downward. Pressure along the arch of the foot caused a "soreness;" when applied along the skin below the outer malleolus it gave rise to a sharp, darting, "sticking" pain. Passive movement at the ankle, even slight, in the direction of flexion or extension, and especially in that of lateral motion inward, excited the same sharp pain; lateral motion outward, however, was not painful. The toes could be moved passively in any direction without causing special suffering. Voluntary movement was confined to the toes, and even there required considerable effort for its performance. At the ankle-joint flexion and extension could not even be attempted, for fear of the "sticking" pain below the external malleolus. In addition to the rational symptoms which have already been referred to, she said that for several weeks she had noticed that about half-past three o'clock in the afternoon there would be an increase in the general discomfort of the foot, and that a severe aching of the instep

and great-toe would at the same time set in and remain for several hours, gradually diminishing in severity: during the past few days this ache had given place to a feeling of numbness, which followed a similar course. She had suffered from intermittent fever during childhood, but had had no chills for several years, until she entered the hospital, where she had three, for which she received a special treatment.

It seemed probable that the long duration of the lameness in this case had been determined in great measure by the repeated attacks of acute inflammation which followed at intervals after the original injury. As a result, both the amount of plastic exudation and the formation of fibrinous adhesions had been unusually large; the local nutrition had suffered severely after each new inflammatory attack, until the foot was reduced to a blue, cold, numb, and aching appendage, and the whole limb had become useless. The general health had failed, as a natural sequence to the local conditions, modified perhaps by the existence of miasmatic blood-poisoning. The case seemed in every way to be suitable for a successful treatment by manipulation; for, although involving general as well as local defects in nutrition, the indications pointed strongly to the sluggish circulation in the ankle and foot as the chief obstacle to improvement. Accordingly, on the 23d of June, it was commenced; but it was thought best not to begin the local treatment at once, and so a general kneading and shampooing of the limbs and body were used for a few days, until the patient had become accustomed to the process and to the manipulator. The actual treatment, therefore, did not commence until the 27th of June, when the following manipulations were performed: The whole limb, from the knee down, was first rubbed and kneaded for twenty minutes—lightly where the parts were tender, and forcibly where the pressure was well borne. The skin was sponged with water and dried with a towel whenever the epidermis became dry and heated by the friction, and was in danger of being rubbed off (it may here be remarked that oil is sometimes applied to the skin to prevent this accident). Then the manipulator passively exercised the toes in various directions, and very gently moved the ankle-joint in the direction of ex-

tension and flexion. The extent of movement in the latter was governed by the amount of pain which it produced, care being taken to avoid giving rise to more than slight twinges, which could be borne without suffering. These manœuvres occupied about five minutes, and were followed by the kneading and frictions a little more forcibly administered, which in turn gave way to the passive movements, alternating until the whole treatment had continued for an hour and twenty minutes. At its termination not only was there a decided increase of motion in the direction indicated, but the pain which movement and friction produced was very greatly diminished, and the patient said that her foot felt more natural than it had done since it was first hurt. The next day on her arrival she hastened to tell me that she had waited in vain on the preceding afternoon for the usual attack of numbness, and that her foot had remained warm. The dusky blueness of the skin, however, was still present. This day the treatment was repeated for the same length of time, but the movements were given with more vigor, and rotation was added to flexion and extension at the ankle. These exercises were gradually increased each day in force and length of application, while the kneading and frictions were diminished, so that, after the first two days, the manipulations of each morning consumed about three-quarters of an hour. The correctness of the diagnosis was fully confirmed. On the seventh day of treatment passive motion of the ankle-joint was free in every direction, and entirely painless except when the foot was bent laterally inward to its fullest extent; the adhesions had all given way as the force of the manipulations had been increased, snapping audibly one after the other; the foot was warm, and had a natural appearance, the puffiness being nearly all gone, and the superficial veins once more showing themselves; she was able to wear the same sized shoe on the right as on the left foot; the discoloration which had been noticed around the external malleolus when the treatment was begun had altogether disappeared. A mechanical support was now applied to the ankle to prevent accident and give confidence, and she began to learn to stand and to walk with her right leg. At first the knee could not be bent without considerable effort—

an inability which is usual whenever a joint has for a long time been kept idle—and a few lessons in flexing and extending it became necessary. But progress was rapid, and by the 17th of July, after twenty-one days of treatment, she gave up the crutches altogether, and walked with a cane. Four days later her treatment was at an end, and she went to the sea-shore for the benefit of the bathing. On the 11th of September she visited me again to report her progress during the summer. Her countenance bore every sign of a marked improvement in bodily health. She no longer used any kind of artificial support, and walked without a limp. The right leg was still weak, of course, and her gait was therefore slow; but she was able to go about the house without difficulty, and to walk half a mile in the street without growing much fatigued. In fact, she was practically cured, although time, use, and caution against accident, will be needful to remove the remaining vestiges of her injury.

If this case had fallen into the hands of a “bone-setter,” its treatment would have been varied somewhat in method, but the ultimate result would probably have been quite as satisfactory to the patient. Instead of requiring a week to break up the fibrinous adhesions and put an end to the pain in the foot and about the ankle, he would, with a single dexterous but violent twist, have ruptured all the bands at once, and, after an instant of agony, have brought complete relief to his patient. The gentler passive manipulations would have come afterward, and their good influence upon the local circulation would have been reënforced by efforts at walking, which the bone-setter would have taken care to insist upon. His method never fails to impress the patient with his prowess as an operator; while the contrast of his confident, bold, and successful treatment with the changing and unsatisfactory means which the “regular doctor” has perhaps been trying for months, without effect, impresses the ignorant with a sense of mystery and magic which is apt to be an important element in their admiration of medical skill. In this case a violent and sudden rupture of the adhesions was not attempted, because they were not of sufficient strength to require it; they yielded readily enough to the passive movements which have been described.

When such is not the case, however, the more active method should be employed, either with or without an anæsthetic.

In reporting this example, my object is not to show it as a remarkable result in an exceptional instance, but, on the contrary, to point out that, in the treatment which was used, we have a means that is capable of accomplishing the cure of chronic sprains with more ease and uniform success than any other method with which I am acquainted. It may be objected by the busy practitioner that it takes too much time for its application; but, on the other hand, when it is thoroughly and properly used, it is capable of subduing with astonishing rapidity the effects of an injury which, under the plans of treatment that are in common use, would linger on for days or weeks. The time which is lost by the manipulator is more than made up by that which the patient gains. With its employment in the treatment of recent sprains, I am not so familiar, and cannot speak from personal knowledge, but the evidence of many distinguished surgeons in Europe has been unreservedly given in its favor.

The following extracts, from an excellent work upon the subject of manipulation, as a means of treatment,¹ state with great clearness its relation to acute as well as chronic sprains: "In all the preceding articles I have invariably remarked that manipulations should be avoided whenever there were indications of existing inflammation; but this is not so with reference to sprains. Indeed, according to the opinion of MM. Bagin, Bonnet, Brulet, Elleaume, Girard, Lebatard, Magne, Méry, Quesnoy, Ribes, Bizet, etc., etc., who had recently published their observations upon sprains cured by manipulation, these affections should be treated from the commencement by this procedure. The pain, ecchymosis, and swelling, disappear, as if by enchantment. Some, pushing matters still further, make use of manipulation even when a laceration of a malleolus exists, satisfied that they have advanced one step toward cure, by removing the pain and swelling, and by restoring the displaced tendons.

"I admit that, if the distinguished physicians who have reported these facts had not persuaded me, by their complete

¹ "Estradère du Massage," Paris, 1863, pp. 146, *et seq.*

accord, that manipulations were not injurious in such instances, I should have been very guarded in venturing to suggest them; but the facts are unquestionable: however strange they may be, we must admit them, and, as M. Bizet says, in his monograph upon the treatment of recent sprains by manipulation, impressed by Bauden's remark at the Academy of Sciences, that, in seventy-eight amputations of the leg or foot, performed by army-surgeons, sixty arose from sprains as their starting-point, we ought to seize with eagerness each opportunity to try a means which, far from disappointing us, will give us unlooked-for success.

"From the observation which he presents, M. Bizet draws the following conclusions:

"1. The cure by manipulation is the more prompt and certain in proportion as the remedy follows, so to speak, upon the accident.

"2. The cure by manipulation may be wrought both in simple and in complicated sprains, except in the case of fracture of the articular extremities.'

"It is evident, from these conclusions, that M. Bizet does not prohibit the use of manipulations in the case of sprains, which are complicated by fracture of the articular extremities.

"I add a third conclusion, which M. Bizet has not drawn, and which, therapeutically considered, is very important: that is, that of all the means which are recommended for sprains, manipulation is the simplest, the easiest in application, and the most efficacious; for it cures a simple sprain at the first sitting, and seldom is its frequent repetition necessary.

"Such are the surprising results which manipulation exhibits in the treatment of sprains—results which put manipulation far above all other methods of treating them.

"Pouteau had already recognized this, when he said: 'Sprains may be instantaneously cured by this means (manipulation), and I cannot understand why our surgeons ordinarily are unsuccessful with this little procedure, which they give up to uneducated persons, who, notwithstanding, accomplish the end by rubbing the part, well oiled, with the thumb alone, or with the whole hand. I sometimes have this operation done at the beginning, and almost always with success.'

“At the present day, those physicians who have it in their power to bring this method into use are unwilling even to make a trial of it, or to do as much as those of Pouteau’s time; and they suffer their patients to go to bone-setters, charlatans, fortune-tellers, and sprain-blowers, who accompany their manipulations with certain mysterious signs. But we ought not, as M. Nélaton says, ‘systematically to reject a useful means, merely because it has been discovered and is employed by men who are unskilled in medical art.’ The use of manipulation dates from the earliest times; it has been known in all ages: at the present day, physicians of the highest respectability employ it, recommend it, and publish the results from its employment in the journals. Why, then, reject a therapeutic means whose effects are so striking?”

Bibliographical and Literary Notes.

ART. I.—*Lectures on Clinical Medicine*. By A. TROUSSEAU, late Professor, etc., etc. Translated from the third revised and enlarged edition, by Sir John Rose Cormack, M.D., F.R.S.E., etc., and P. Victor Bazire, M.D., etc. 8vo, vol. i., pp. 935; vol. ii., pp. 992. Philadelphia: Lindsay & Blakiston, 1873.

WE are delighted at the appearance of Trousseau’s admirable lectures, published complete in two volumes, and at a price which places them within the reach of every physician. The scope of the previous American edition, it may be presumed, is tolerably well known by the profession, although, we doubt not, the price of the five volumes, of which it was composed, excludes it from many libraries which it otherwise would have adorned. For the benefit of those who are not already familiar with the work, we will venture a few remarks respecting its general character, as well as some of the special views set forth in this edition, without attempting to enter into a critical review.

As is implied in the title, the work is a collection of “Lectures on Clinical Medicine,” the order of the subjects being

more in accordance with the ordinary occurrence of cases than in the order of a systematic treatise on the practice of medicine. The work covers nearly the whole domain of medicine, although many diseases are not described as such, some being noticed incidentally under other heads. Among the diseases not specially treated are yellow fever and cholera—an omission which would seem hardly pardonable were not the lack nearly equalized by the description of some affections not usually considered within the embrace of practical medicine.

The work is more noted for its practical character—the completeness of description, and minute directions in treatment—than for pathological discussions. Indeed, we know of no work on general practice in which the clinical history of disease is more clearly given, or in which the minutiae of treatment are more complete, or the style more easy. In the latter respect, Trousseau has justly been classed with Watson. No one book contains every thing. While Aitken abounds in the elaborate discussion of pathological questions for the scientific physician, and while Watson and Flint illustrate a happy combination of pathology, description, and therapeutics, in a condensed form for ready reference by the general practitioner, Trousseau is added to the list containing the minutiae of the practical elements so essential to the success of every practitioner.

As the author treats his various subjects from a clinical rather than from a pathologico-anatomical stand-point, so does he in his management of disease attack it frequently empirically, so to speak, instead of scientifically. Or, rather, while the collateral sciences are not ignored, disease must be treated more from the results of experience than from supposed principles of scientific deduction.

In this edition the work has undergone important modifications, under the editorship of M. Michel Peter, partly before and partly after the death of M. Trousseau, but under the instructions of that eminent teacher.

The order of lectures is changed to the regular order in which they were delivered, and the notes to the twenty-three lectures translated by the late Dr. Bazire are omitted.

Perhaps the most notable change in any one affection

treated of, is in the account of typhoid fever or "dothinenteritis." The new appliances used in diagnosis, viz., the thermometer, sphygmograph, laryngoscope, and ophthalmoscope, are all duly mentioned.

Just one hundred pages are devoted to the subject of "Diphtheria" (vol. i., pp. 335, *et seq.*). We doubt if many American practitioners will agree with the author in considering membranous laryngitis or true croup the same as laryngeal diphtheria, or will believe it comes under the same rules for treatment. The author continues to advocate local measures—caustics, etc.—to prevent the spread of the membrane, and depends for constitutional treatment wholly upon artificial support. Local measures in this country are much less relied upon than formerly, and remedies to prevent the formation of heart-clot, as first suggested by Dr. J. F. Meigs, of Philadelphia, are, or should be, resorted to in addition to the supporting treatment. We notice no mention of the danger of sudden, unexpected death in certain cases from the occurrence of heart-clot.

We think the author is hardly up to the times in his discussion of "Puerperal Purulent Infection" (vol. ii., pp. 834–857), although a good deal of useful practical matter is given.

On the subject of "Pulmonary Phthisis" the author expresses a disbelief in the identity of, or causative relation between, the gray and the yellow tubercle. He says (vol. i., p. 544), after accepting the opinions of C. Robin:

"Putting aside the anatomical lesion, the nature of which is very open to discussion, the form of phthisis properly called galloping will be found to differ both from rapidly-progressing and chronic ordinary phthisis. We shall see that the difference is still greater in respect of the symptoms than of the lesions."

Also, on page 546, M. Trousseau takes the following means of expressing his own view:

"For the reasons now laid before you, one of my former excellent pupils, now my colleague in the Faculty of Medicine, as well as in the medical service of the hospitals—Dr. Empis—has come to the conclusion that galloping phthisis ought to be considered as distinct from tuberculization, from

which he says it differs not less in respect of its lesions than of its symptoms. With the view of fully preserving this distinction, he has given the name of granular disease to the affection which is characterized anatomically by the production of granulation in the parenchyma or serous membranes. According to this doctrine, galloping phthisis is the thoracic form of granular disease; this form is seen in brain-fever or tubercular meningitis, and the abdominal form in cases having typhoid symptoms.”¹

On page 558, vol. i., the author makes a statement coinciding with our own experience:

“Gentlemen, the real friction-sound of pleurisy is much more rare than is generally said and believed.

“I have seldom had an opportunity of hearing it at the beginning of a pleurisy, a circumstance sufficiently explained by the fact that I am seldom called in at that early stage of the disease, and that a few hours are sufficient to allow a more or less considerable effusion to take place. It is generally toward the end of the attack that we have the best opportunity of recognizing the sound produced by the rubbing of the pleural surfaces. I again repeat that this friction-sound is much less common than has been alleged.”

Some disparity may be noticed in the relative prominence given to the different subjects, but this is due to the fact that some cases which are presented are more suggestive than others, which feature would not obtain in a systematic treatise.

We should be glad to continue our observations further, but the work offers so large a field for discussions that there would hardly be an end to our discourse. From what has already been said, it may be inferred that we heartily recommend the work to all as a valuable addition to works already in the library.

¹ *Vide* Empis, “De la Granulie, ou Maladie Granuleuse,” Paris, 1865.

ART. II.—*Hand-Book for the Physiological Laboratory*. By E. KLEIN, M. D., J. BURDON-SANDERSON, M. D., F. R. S., MICHAEL FOSTER, M. A., M. D., F. R. S., and I. LAUDER BRUNTON, M. D., D. Sc. Edited by J. Burdon-Sanderson. In two volumes. With One Hundred and Fifty three Plates, containing Three Hundred and Thirty three Illustrations. Philadelphia: Lindsay & Blakiston, 1873.

WE have in this valuable work the result of the joint labors of several authors of distinguished ability, edited and arranged with the special object of facilitating experimental physiological investigation. All sound knowledge in physiology is based on actual experiment, and the chief purpose this book is to point out clearly the various methods of experimentation in all branches of physiology. Great pains have been taken to furnish the student with ample details as regards materials, work, and instruments. It is, therefore, a book for the laboratory, and a very complete and satisfactory one. The first part of the work is devoted to the method of studying histology, and deals exhaustively with the preparation and examination of the various tissues. The second part deals with the functions of nerve and muscle, the laws of contraction, the influence of electricity, etc. The third part treats of the physiology of digestion and secretion.

A distinctive feature of the work is the abundance of beautiful illustrations, mostly original, which are placed by themselves in the second volume. Many of the microscopic drawings are of a delicacy far surpassing that usually found in text-books.

In no other work accessible to the student will be found so large an array of physiological facts of recent date, or so full and clear an account of the mode of manipulation; and we therefore confidently recommend it to the attention of all who are interested in the wide and fertile field of physiological research.

BOOKS AND PAMPHLETS RECEIVED.—A Discourse commemorative of the Life and Character of Hugh L. Hodge, M. D., LL. D., late Emeritus Professor of Obstetrics and Diseases of Women and Children, in the University of Pennsylvania. By R. A. F. Parsons, M. D. Delivered October, 1873. Philadelphia: Collins, 1873.

A Hand-Book of the Theory and Practice of Medicine. By Frederick T. Roberts, M. D., M. R. C. P., Assistant Physician to the University College Hospital, London, etc. Philadelphia: Lindsay & Blakiston, 1874.

The Treatment of Typhoid Fever. By Joseph F. Montgomery, Sacramento, California. Reprinted from the Transactions of the Medical Society of the State of California, for the Year 1873.

Fœtal Physical Diagnosis, with an Analysis of the Examination of One hundred and Twenty-six Cases. By Frank Chilson, M. D. Reprinted from the American Practitioner for December, 1873.

A Description of New Instruments for making Examinations and Applications to the Cavities of the Nose, Throat, and Ear. By Thomas F. Rumbold, M. D., St. Louis, Mo., 1873.

The Microscopic Structure and Mode of Formation of Urinary Calculi. By H. Vandyke Carter, M. D. With Illustrations. London: J. & A. Churchill, 1873.

Clinical Notes on the Electric Cautey in Uterine Surgery. By J. Byrne, M. D., M. R. C. S. E., etc. New York: William Wood & Co., 1873, pp. 68.

The Lymph Spaces in Fasciæ; a New Method of Injection. By H. P. Bowditch, M. D., etc. Boston: David Clapp & Son, 1873.

Excision of the Thyroid Gland. By Patrick Heron Watson, M. D., F. R. S., etc. Edinburgh: Oliver & Boyd, 1873, pp. 7.

Transactions of the Michigan State Medical Society, for the Year 1873. Series I., vol. vi. Lansing: W. S. George & Co., 1874.

Transactions of the New Hampshire Medical Society, Eighty-third Anniversary, held in Concord, June 11 and 12, 1873.

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The Physician's Hand-Book for 1874. By W. Elmer, M. D., and A. D. Elmer, M. D. New York: W. A. Townsend.

Report of the Board of Health of the City and Port of Philadelphia, to the Mayor, for the Year 1872.

Fourth Annual Report of the State Board of Health of Massachusetts, January, 1873.

The Physician's Visiting List, for 1874. Philadelphia: Lindsay & Blakiston.

Annual Report of the Surgeon-General of the United States Army, 1873.

Translations.

The Pathology of the Sympathetic.—Dr. A. Eulenberg (*Berlin. Klin. Wochschr.*, x., 15, 1873) reviews a series of pathological conditions, the sympathetic nature of which is still considered doubtful, though many indications may point to such a cause, as in morbus Basedowii, hemicrania, and angina pectoris. To this class belong, first, cases of mydriasis, with or without disturbances of accommodation, the cause of which may be sought equally, either in irritation of the cervical sympathetic, or partial paralysis of the sphincter, papillæ, and tensor choroideæ. The accompanying symptoms and the history may explain the nature.

In a case of this kind he concluded that irritation of the sympathetic existed, for the reason—1. That a swelling of the cervical region had set in almost simultaneously with the mydriasis, and that several swollen lymphatic glands still existed in the course of the cervical sympathetic, the uppermost of which, corresponding to the gangl. suprem., was tender on pressure; 2. That headache existed, also drooping of the face and coolness of the ear of the affected side, and that also the temperature of the outer ear of that side was 0.4° C. lower than on the unaffected side. The disturbance of accommodation Eulenberg looks upon as an indirect consequence of irritation of the sympathetic, viz., contraction of the arteries, and therefore increased secretion and heightened intra-ocular pressure. Where, as is the rule, the vaso-motor nerves are but slightly affected in disease of the cervical sympathetic, mydriasis and disturbances of accommodation may nevertheless be wanting.

The second case is one of attacks of cerebral congestion with circumscribed pains, which, for one year, always commenced after rising in the morning, then disappeared at noon for about an hour, then again set in and continued until night. The pain was limited to the right temple and forehead, was preceded by a feeling of heat in the cheeks, and redness of the face and ear of both sides, but more marked on the right. Both pupils were normal, the right superior ganglion was tender on pressure during the attacks. Eulenberg assumed that there

was a periodical atony of a greater or lesser vasor circle, analogous to the angio-paralytic form of *migraine*. He therefore ordered quinine from 0.6 to 0.9 gramme daily. The latter dose only proved effectual, the condition improving to such a degree, that, after the use of twenty-one grammes, the attacks confined themselves to the period of awaking, and at night to between five and seven o'clock. No toxic effects resulted from this large dose.—*Schmidt's Jahrb.*, No. 5, 1873.

Etiology of Bright's Disease.—Prof. von Luschka (*Virchow's Archiv*, lx., 1872) adduces the following case in support of the opinion that venous stasis is one of the causes of Bright's disease: At the autopsy of a man, thirty-three years of age, a round, concrete-like vegetation, about nineteen metres in diameter, was found in that portion of the vena cava situated between the diaphragm and its entrance into the auricle. At its upper extremity the vegetation projected into the auricle, and its lower extremity so diminished the calibre of the vessel that its diameter was reduced one-third. Microscopic examination of the tumor revealed its composition of connective tissue, its outer layer being calcified. Chemical examination, however, revealed the absence of connective tissue, and gave rise to the conjecture that the substance was of an amyloid nature.—*Schmidt's Jahrb.*, No. 5, 1873.

Treatment of Erosions and Excoriations of the Vaginal Portion of the Uterus.—The text-books teach that cauterizations with nitrate of silver are to be repeated every six or seven days; deviating from this rule, Dr. Dawosky has, for a number of years, made the applications daily, and assures us that his successes have been much quicker, and he has never done harm. The applications are not made with the stick, but with a solution of the nitrate (four grammes to eight of water) by means of a fine pencil. When the cervical canal is the seat of catarrhal inflammation, is hyperæmically softened and deprived of epithelium, the application is first made to the internal os, and afterward the external parts are cauterized. In case of contracted os, it is necessary to carry the pencil, with a steady hand, through the speculum into the os, and then to quickly

turn it, as a second introduction is impossible on account of the contraction and complete occlusion of the os caused by the irritation. In the cauterization of erosions and excoriations, the applications are made till a scab has everywhere formed over them; cold water is then injected and the cervix covered by a tampon saturated with glycerine. Treatment must be commenced immediately after cessation of the menses, in order to accomplish a cure before the commencement of the next catamenia. If the patient complains of burning pain after the cauterization, salt-water is applied through the speculum. The occurrence of slight hæmorrhage only is desirable; copious hæmorrhage has never been observed by the author.—*Blätter für Heilwiss.*, No. 4, 1873—*Schmidt's Jahrb.*, No. 5, 1873.

Hydrate of Chloral in Uterine Eclampsia.—Dr. H. Bourdon (*Gazette des Hôpitaux*, No. 22, 1873) reports the following case: A primipara, twenty-seven years of age, who, for a fortnight previous, had suffered from œdema of the feet and eyelids, headache, sleeplessness, great debility, and frequent desire to urinate (the urine containing a large quantity of albumen), had a severe attack of eclampsia, lasting ten minutes, on the fourth day of her admission into the *Charité*. Before the attack had ceased, an enema, containing four grammes of hydrate of chloral, was administered, whereupon the patient immediately went to sleep. The next morning, when the first pains set in, a similar enema was given, and a third during the afternoon; one hour later, the labor was successfully terminated, the patient not having experienced any pain from the severe uterine contractions. A second attack of eclampsia setting in toward evening, a mixture containing four grammes of chloral was given, upon which a quiet night followed; the œdema in a short time completely disappeared. In another case, Dr. Bourdon gave the remedy in order to forestall a threatening attack; in this case, also, the remedy was given partly by the mouth and partly by enema. The labor was concluded almost painless and without complication. The observations having been made that labor *pains* are very much lessened by the use of chloral without diminishing their strength, their

regularity and intensity seeming, on the contrary, to increase, Dr. Bourdon also gave the remedy in normal labors, when, after strong, rapidly-succeeding pains, the labor did not advance correspondingly, and the patients became excited and exhausted, making a natural termination of the labor very doubtful. In ten such cases he ordered chloral—two to four grammes—and found that the extreme agony and frequency of the contractions were always diminished, the patients became more quiet, even slumbered, felt stronger, and the labor progressed normally. Dr. Bourdon also thought that the contractions did not lose in intensity, but rather increased, so that the time of the labor was even shortened in the case of primipara.—*Schmidt's Jahrb.*, No. 5, 1873.

Treatment of Carbuncle and Malignant Pustule.—Dr. Bardinet (*Bull. de Thérap.*, January 15, 1873), convinced of the necessity of thoroughly incising carbuncles, proceeds by first pushing a straight, flat knife through the base of the tumor without penetrating the skin on the opposite side; the tumor is then separated from its base by two circular cuts by the introduction of a probe-pointed bistoury, the skin being preserved; finally, three incisions are made from the first wound toward the surface, which divide the carbuncle subcutaneously into four parts of a rectangular shape; injections of alcohol, twenty-five per cent., are then made into the wound. Dr. Bardinet applied this method in the case of a young man who had a carbuncle on his shoulder fourteen centimetres in length, and thirteen centimetres in breadth. An improvement of the subjective symptoms soon set in and the suppuration was not very profuse.

Dr. Vignard (*Gaz. de Paris*, No. 15, 1872) had a sailor under treatment, who, for three days, had suffered from a malignant pustule. In the centre of the right cheek there was situated a hard, deepened scab, 0.5 centimetre in diameter, surrounded by an areola of small white vesicles. The whole cheek appeared of a grayish-blue color, infiltrated like a board, glistening, very itchy (otherwise painless), without fever. After opening the vesicles, lint saturated with concentrated carbolic acid was applied. As the swelling of the cheek had

increased toward evening, a crucial incision was made through the scab, a bloody serous fluid being evacuated, but no pus. The wound was also treated with strong carbolic acid. On the next day, the swelling had spread to the neck, but diminished on the cheek; the scab remained unchanged, with a few vesicles in the neighborhood. Treatment with carbolic acid was now discontinued. As the swelling gradually disappeared and the gangrenous portions had sloughed off by normal suppuration, the patient was discharged after three days.

Dr. Vignard is of the opinion that this was a true, i. e., inoculable malignant pustule, which, according to Davaine, contains an immense number of bacteriæ. These bacteriæ at first are only present at the diseased point, their penetration into the general system being the cause of the constitutional implication. If it were possible to destroy these bacteriæ in the pustule at a sufficiently early period, the general infection would, as in this case, be absent. To accomplish this object, Dr. Vignard chose carbolic acid in concentrated solution, and urges this treatment, the more, as this plan is less destructive than the usual methods by means of excision, the actual cautery, and strong caustics.—*Schmidt's Jahrb.*, No. 5, 1873.

On the Treatment of Psoriasis.—Dr. Buck, of Lübeck, says that, by the former methods of treating psoriasis, the eruption may be temporarily removed without difficulty, but no protection from relapses is afforded. This is true of the decoctions, etc., so generally used for the so-called dyscrasia herpetica, as well as of most of the external remedies, as, in nearly all chronic cutaneous eruptions, and especially in psoriasis, an etiological treatment is impossible, and a permanent result is promised only by a consistent external treatment.

Dr. Buck has, for a long time, employed for this purpose three remedies: cauterization with nitrate of silver, penciling with tincture of iodine, and penciling with acetic acid. He has obtained the most certain and rapid results from the use of acetic acid.

After the epidermal growths have been softened and loosened by several warm baths and soap, the glistening scales are removed with a soft brush. At first, a few points

of eruption are to be penciled with the acetic acid once a day. The number of points, and the frequency of the applications, must be determined by the patient's strength and his willingness to endure the pain which soon commences. After the action of the remedy, the place becomes discolored, white, and somewhat swollen, and the neighborhood reddened. After drying, it becomes horn-like, and with repeated cauterization the formation of vesicles and suppuration takes place. The penciling is to be repeated until the skin remains smooth and feels normal to the touch. There are never any scars left, which is of importance when the remedy is used on the face. The treatment lasts for from four to six or eight weeks, and, properly carried out, is not followed by relapses. A particular advantage is, that the patients, when they have but a quarter of an hour, morning and evening, to devote to the applications, can attend to their usual business.

Acetic acid is also, according to Dr. Buck, the most efficacious remedy in cases of abnormal development of the papillary bodies, in indurations, corns, warts, etc., and also deserves trial in ichthyosis.—*Memorabilien*, No. 6, 1873, from *Berliner Wochenschrift*.

On the Origin and Treatment of Writer's Cramp.—F. Runge cites several cases from his practice which manifested themselves either as various kinds of local affections of one arm, or as a disease of the central nervous system, and, in certain cases, appeared as simple results of excessive muscular efforts. In a man who had suffered two years from this affection, there was a very painful point on the external condyle of the right arm. Pressure over this caused powerful reflex motions. Energetic cauterization of the painful part (Dr. Runge suspected chronic periostitis), combined with rest of the arm for six weeks, cured the affection completely. In a second case, the proper treatment and cure of a chronic inflammation of the nail of the right thumb also caused the cramp to disappear. A chronic inflammation of the brachial plexus of both sides, following a painful ulcer of the left arm, caused and maintained the cramp. Together with rest, the constant current was applied (positive pole to the arms, negative to the

painful point over the cervical vertebral column), and soon caused a considerable improvement. In a fourth case, finally, there remained, consecutive to an apoplectic attack, a weakness of the right arm, and particularly of the extensors of the hand and fingers. In consequence of the unfavorable prognosis of the central disease in this case, no permanent improvement could be obtained, notwithstanding repeated electrization.—(*Centralblatt*, No. 33, 1873, from *Berlin. Klin. Wochenschrift*.) A case is reported by C. J. Rossander, in *Hygiea*, Stockholm, July, 1873, where local massage and strychnine injections cured the disease permanently.

Modification of Graefe's Method of Extracting Cataract.—Dr. Giulio Florer, of Pavia, communicates to the *Gaz. Med. Ital. Lombardia*, November 30, 1873, a modification of Graefe's method which he considers very advantageous.

The laceration of the capsule is one of the most delicate and sometimes one of the most difficult steps of the operation, either from the anatomical conformation of the eye or from the hæmorrhage which sometimes takes place after cutting the iris. The edges of the corneal incision are also injured more or less by contact of the cystotome. Dr. Florer thinks he has overcome these evils by incising the capsule with the cataract-knife during the section of the cornea, and before the counter-puncture is made.

The knife used is the same as that of Graefe, with the exception that a cutting surface is ground on to the back of the instrument, extending from the point a short distance backward.

In the operation, instead of the knife passing free through the anterior chamber, the double-edged portion is made to enter the capsule by raising the handle slightly, and, at the same time, slight pressure is made with the forceps on the globe in order to render the capsule more tense. The two surfaces of the knife being thus parallel with the iris, the short cutting surface incises the capsule to an extent proportionate to the dilatation of the pupil. After this, the knife is made to resume the proper position for the counter-puncture. A V-shaped incision is thus made of sufficient size for the escape of the lens.

Dr. Florer reports two of the four cases in which he tried the proposed modification. The results seem to have been very good.

Transmigration of Ascaridi.—Prof. G. Du Jordin reports, in the *Nuova Liguria Medica*, No. 18, 1873, the escape of three ascaridi lumbricoidi from the urethra of a man. The patient was a writing-master, forty-two years of age. He began to suffer from intestinal fever about fifteen years previously, and from time to time had severe attacks of this kind. For some months before the escape of the worms from the urethra, he had had very severe enteric symptoms, with subsequent pains in the hypogastric, sacral, and anoperineal regions. Later the pains were referred more to the neck of the bladder. The pulse and respiration became accelerated and the patient was confined to his bed. There was rectal and vesical tenesmus, and he could pass but a few drops of urine at a time. The three worms were passed during the space of ten days, after which the patient's health was gradually restored. One worm was eight cm., another twelve cm., and the third six cm. in length.

In No. 24, 1873, of the same journal, is related a case of Prof. Giusippi Tenderini's, where the same kind of worms were passed from the female urethra. At the age of fourteen, the patient, who was previously quite healthy, began to suffer from extreme weakness. She soon began to have severe pain in the left iliac region. A hard tumor of considerable size, which soon developed, was referred to the broad ligament. Symptoms of cystitis and well-marked enteritis appeared. One morning, while the doctor was injecting the bladder, the patient complained of a severe piercing pain, and there issued from the instrument an enormous quantity of fetid purulent matter. The next morning this matter was more dense. The abdominal tumor continued to diminish in size, especially when pressure was made over it. One day the patient experienced a piercing sensation at the urethral orifice, and, to her great surprise, saw issuing from it a worm of about 17 cm. in length. Four more of the worms were subsequently evacuated, mingled with the purulent matter. The discharge

of matter ceased when patient was twenty-three years of age, and the menses appeared. She regained her health, though incontinence of urine continued for a number of years, which was especially troublesome when she stood up.

Treatment of Erysipelas.—A new method of treatment in erysipelas has been employed by Kaczorowsky, of which he states that not a single fatal case has occurred since its use in several of the hospitals of Posen. The affected part and surrounding portions of skin are painted every three hours with a mixture of carbolic acid and turpentine (1:10) over which compresses of lead-lotion are applied; if the inflammation is extensive, the parts are covered by ice compresses, which are frequently changed. Adynamic tendencies are combated by Hungarian wine and camphor. At the inflamed portions the redness at first becomes more intense, and even vesiculation takes place; the epidermis, however, soon dries, first at the inflamed portions, later at the surrounding portions: the skin becomes "tanned." In the course of twenty-four, at most forty-eight hours, the disease is mastered. Temperature and pulse suddenly diminish. Relapses have never been observed with this treatment.—*Berl. Klin. Wchschrft., Centralblatt*, March 29, 1873.

New Method of treating Blisters.—In treating neuralgia in women, flying blisters, with the subsequent addition of morphine to the denuded surfaces, are, as is well known, a valuable remedy. The anodyne effect is necessarily of short duration, inasmuch as the surface soon dries and does not allow of further absorption. If, however, laudanum be painted over the surface two or three times daily, the anodyne effect may be prolonged even to complete cicatrization. In dressing the blister, no fatty matter should be applied, and the surface should be kept covered from the air. By this method, the action of opium, if frequently applied over a large surface, may be carried to narcotism. Recent experiments prove that liquid substances are little or not at all absorbed when the skin is intact, but the case is very different when the part is the seat of an active irritation. After the application of mus-

tard, the action of the anodyne is quite manifest, though in a less degree than after a blister.—*Gazette de Joulin et Revue de Thérapeutique*, February 15, 1873.

Injection of Silicate of Soda in Vesical Disease.—M. Dubreuil recommends the injection of a solution of silicate of soda to prevent the decomposition of urine in aggravated cases of vesical disease. Numerous experiments have proved that the salts of soda are anti-putrid. One gramme of silicate of soda placed in a solution of 100 grammes of urea prevents, for an indefinite time, its decomposition or transformation into carbonate of ammonia. In a case of vesical disease from enlarged prostate, a solution of 4 grammes to 150 grammes of water was injected, with the effect of restoring the urine to its normal condition.—*Gaz. Méd., Revue Thérap.*, March, 1873.

Transfusion of Blood.—In the case of a woman, aged twenty-one years, who was suffering all the alarming symptoms of extreme *post-partum* hæmorrhage, viz., imperceptible pulse, dilated pupils, insensible to light, and cold extremities, M. Aveling proposed and practised transfusion of blood. A vein of the coachman of the house was opened and the blood was conducted by a tube directly into the arm of the patient. The result was most gratifying, as the pulse soon began to beat at the wrist, and heat returned to the limbs. In a few hours the patient became again conscious, and a further lease of life was ultimately assured.—*Gazette Médicale*.

Rules for the Employment of Cubebs in Diphtheritic Pharyngitis.—1. Always use recently-prepared, finely-powdered cubebs, suspended in a liquid.

2. Administer it as soon as possible, and even at the commencement of the disease, if the affection is recognized.

3. Always give it in large doses, the medicine never having caused the slightest accident—from twelve to thirty grammes in twenty-four hours, according to the age of patient.

4. Continue the use of the remedy for several days after the disappearance of the false membranes, until there is no further probability of a relapse (generally for three or four days).

5. Recommence the use of the remedy immediately, and continue it with perseverance, at the least reappearance of the membranes.

6. Always combine with this remedy a tonic, and building-up regimen (beef-tea, roasted meats, good wine, cinchona wine, and, in certain cases, iron).

This is the method of treatment adopted by Dr. Courcelle (*Journal Méd. de la Mayenne*). This practitioner has entirely abandoned cauterization, which M. Trideau very properly calls a barbarous procedure. He considers insufflations of tannin, and detersive gargles as simple adjuvants, useful in certain very rare cases.

M. Guiller has given several formulas in the June number of the *Journal Méd. de la Mayenne*. M. Courcelle prefers the following: \mathcal{R} . Fresh, finely-powdered cubebs twelve to thirty grammes; water, malaga wine, and syrup of orange-peel, ãã sixty grammes. To be taken during twenty hours.—*La France Médicale*, No. 71, 1873.

Treatment of Chilblains by Electricity.—Dr. Santopadre, encouraged by the results obtained by M. Alberto Riva in transitory algide paralysis of the vaso-motor nerves (*Rivista Clinica*, No. 3, 1871), has very successfully employed electricity in the treatment of chilblains.

Dr. Santopadre employs Gaiffe's electro-magnetic apparatus, with a current of medium intensity. The positive pole is placed in the vicinity of and somewhat below the seat of the disease. The negative pole is applied to or passed over the inflamed point. The *séance* lasts ten or fifteen minutes, and, if necessary, is repeated the following day. The pruritus usually ceases after the first *séance*, and the pain is very much diminished; at the third or fourth the cure is complete.

The author cites several cases in support of this treatment.—*Gaz. Med. Ital. Prov. Ven.*, and *Lyon Méd.*, No. 12, 1873.

Action of Violet Light on Vegetable and Animal Life.—R. Ruspini, in an erudite article, reviews all the observations made by Bert and Hunt on this subject.

It is known that plants cultivated in greenhouses, and

animals raised in stables with windows furnished with violet glass, are developed and grow with remarkable activity. Swine and cattle raised in stables receiving their light through violet windows have also assumed in a short time an extraordinary growth and vigor.

M. Ruspini proposes to apply these facts to human hygiene, and to make use of violet windows to favor the development and ameliorate the constitution of chlorotic or rachitic children. This simple measure would, in reality, be of very easy application and not very expensive in many cases, not only in hospitals for scrofulous children, but also in schools and elsewhere.

The editor of the *Archivio di Med. di Roma* proposes that a preliminary trial of the method be made on silk-worms. An equal number of these worms might be raised under plain and violet glass, and, if the result prove favorable, the method might, with greater boldness, be generalized for numerous applications in agriculture and hygiene.—*Archiv. di Med. Chir. ed Hygiene di Roma*, and *Lyon Méd.*, No. 13, 1873.

Hypodermic Injection of Tincture of Musk in Acute Anæmia.—Breisky (on the treatment of puerperal hæmorrhages) says: "The increased activity of resorption in the anæmic has led us to the hypodermic application of the tincture of musk, which we have already employed in several cases with the most decided results. We have never seen local inflammation of the punctures follow, and have injected ten drops four consecutive times into the skin at the side of the thorax and epigastrium. We now prefer this to the internal administration of the drug."—*Memorabilien*, No. 6, 1873.

Variola in the Female Sex.—Dr. Meyer Lothar, basing his conclusions on observations of 3,221 patients, treated before and after the war of 1870-'71, during the epidemic of Berlin, in two distinct sections, shows in the first the greater disposition of the female sex to the hæmorrhagic form of variola. In the second section this tendency considerably increased the sum of mortality of the females attacked. Meyer, in supporting

this assertion, has pointed out the influence of pregnancy and parturition, made prominent by the preceding statistics, in such a manner that the pretext is useless that it is not at all necessary to refer to the hæmorrhagic disposition of females to explain the greater mortality among them. It is worthy of note that all the pregnant women with hæmorrhagic variola abort and die. In those with varioloid there was sixteen per cent. of metrorrhagia; in those with hæmorrhagic variola, all had metrorrhagia.—*Moniment. Méd. Chir.*, and *Gaz. Med. Ital. Lomb.*, No. 35, 1873.

Pomade for Intertrigo and Eruptions produced by Repeated Scratching.—The subnitrate of bismuth is a substance which causes eruptions to most rapidly and surely disappear in regions where the itching accompanying intertrigo has induced the scratching which has given rise to them. This is one of the most valuable therapeutical remedies.

M. Legal uses it incorporated with glycerine. His formula is: \mathcal{R} . Subnitrate of bismuth, 8 grammes; glycerine, 8 grammes; tincture of cochineal, twenty drops.

The glycerine is a very valuable excipient, because it does not become rancid like the fats. The tincture of cochineal is added merely to give a color.—*Rev. de Thérapeutique*, and *La France Méd.*, No. 46, 1873.

The Action of Coffee on Strangulated Portions of the Intestines.—The action of coffee is considered by Prof. Nagel, of Vienna, in a report on two cases of incarcerated hernia, to be very advantageous. In one case, in which the coffee was not tolerated, caffein was given in doses of one grain every half-hour. The reposition, accompanied by a rumbling noise in the bowels, was readily accomplished. The action appears to depend on a powerful stimulation of the peristaltic movement of the intestinal canal. Prof. Nagel recommends that this innocent and yet efficacious remedy be always tried before other attempts at reposition.—*Memorabilien*, No. 6, 1873; from *Allg. Wiener Zeitung*.

Reports on the Progress of Medicine.

SURGERY.

- 1.—*Acute Obstruction of the Bowels, of Fifteen Days' Duration; Colotomy; Recovery.* By JOHN WILSON, M. D., M. R. C. S. E., Junior Surgeon, Royal Albert Hospital, Devonport. [Lancet, October 4, 1873.]

On June 30th I was called to see a widow, J. G.—, aged seventy-five years. She complained of pain in the iliac regions, where there were slight fullness and increased pain on pressure. There was some amount of general abdominal distention, with clear tympanitic percussion-note all over. The bowels had been moved in the morning, but the motion was very constipated. The tongue was somewhat coated; there was no sickness, and the pulse was quiet. As a rule, the patient had enjoyed good health, but about twelve months ago she had been attacked in a somewhat similar manner, with pain in the left iliac fossa. Purgative medicine was at that time administered, and relief followed; something like pus is described as having come away in the stool. The bowels are generally constipated, and for the last two or three months she has had to return a prolapsed bowel after each motion. All the organs healthy. Ordered half an ounce of castor-oil immediately, to be repeated if necessary, with a bismuth-draught thrice daily.

July 2d.—Patient has had no fecal evacuation. The pain in the iliac regions has increased, and, in addition, there are paroxysmal, cramping pains all over the abdomen. The general distention is somewhat greater. There is a good deal of rumbling noise in the bowels, with occasional sickness. Pulse 96, regular; urine scanty. Ordered ice to back, an ounce of castor-oil immediately, and a large injection of soap-and-water.

3d.—Only a few small pieces of fecal matter brought away with the injection. Passed an uneasy night. Pain and distention of the abdomen about the same; tongue coated; sickness relieved by the ice; percussion-note perfectly clear over the front and lumbar regions of the abdomen. Ordered injection of castor-oil and spirit of turpentine; a pill consisting of a quarter of a grain of extract of belladonna and a quarter of a grain of opium-powder; and a draught composed of two drachms of sulphate of magnesia, ten minims of tincture of hyoseyamus, and ten minims of sulphuric ether, every four hours.

6th.—Since the last note injections have been administered daily, the pill and draught have been taken regularly, but only a few small pieces of fecal matter have come away. The distention of the abdomen has gradually become greater, particularly in the iliac regions. There is still occasional sickness, with some frequent attacks of the paroxysmal cramping kind of pain. To-day an attempt was made to pass the long tube; it was found impossible, however, to get it beyond the promontory of the sacrum, and the quantity of injection retained was only about as much as might be held by a distended rectum. The pulse has ranged between 90 and 95; tongue moist, but coated. The same treatment continued.

9th.—Since the last date the distention of the abdomen has increased, the sickness has been more frequent, and the food and medicine have been taken with reluctance. Two or three pieces of fecal matter are still all that come away with the injection; no flatus has been passed. To-day a slight dullness on percussion can be defined in the left iliac fossa. Urine still scanty. Ordered two minims of croton-oil and eight grains of scammony-powder; draught and pill as before.

10th.—The powder has caused much griping pain and sickness, but no evacuation of the bowels. The dullness in the left iliac fossa has increased slightly; pulse 90, regular and of fair strength. To have two grains of extract of conium in the pill instead of the opium; injections, etc., as before.

11th.—Unrelieved. The croton-oil repeated.

12th.—Unrelieved. The pain and sickness much increased after taking the croton-oil; general appearance bad. All purgatives by the mouth stopped; pill and injections continued.

13th.—The dullness in the left iliac fossa is more marked; all the other symptoms are unrelieved. To-day, my brother, Dr. W. C. Wilson, saw the patient with me, and colotomy was suggested as likely to offer a chance of relief if other remedies failed.

14th.—The sickness has become almost constant, but the vomited matter is not stercoraceous; the abdomen is very much distended; the pain is very great, and she has had no sleep; pulse 108 and weaker.

15th.—The sickness, the pain, and the obstruction continuing, my colleague, Mr. Bulteel, saw the patient in consultation with me. He concurred in the propriety of performing colotomy. The operation was performed in the afternoon.

The colon was opened in the left loin, and a very large quantity—nearly a washhand-basinful—of liquid fæces escaped. The bowel was very dark and friable, presenting all the appearances of strangulation; the superficial veins were much enlarged, varying from about one-sixteenth to one-eighth of an inch in diameter, and full of blood. It was fixed in the usual manner to the edges of the superficial wound, the wound itself, however, not being brought together with sutures, but merely covered over with lint soaked in diluted carbolic acid.

The progress of the case toward recovery has been uninterrupted. Sickness ceased from the day of the operation; pain has been easily relieved with small doses of opium. In two days the bowel began to regain its natural color. On the third day a few ounces of fecal matter came away from the anus, some portion of it being hard and lumpy; and about once a week ever since there has been about the same quantity. For the first two days the pulse remained at 114; on the third it fell to 96, and it has not been higher since. The catheter had to be used for a few days. The wound healed rapidly, and on August 19th, thirty-five days after the operation, she had so far recovered as to come down-stairs dressed; a plug in the artificial anus enabling her to move about with a wonderful amount of comfort.

In all cases of obstruction of the bowels the great difficulty is to localize the seat and to define the cause. In the case just narrated, we were led to the belief that the obstruction was in the large intestine and in the sigmoid flexure, by the following reasons: Firstly, by the slow but gradually increasing distention of the abdomen; secondly, by the occasional character of the sickness in the beginning of the attack, and its increasing frequency as time went on; thirdly, by the inability to pass the long tube beyond the sacrum, and the small quantity of injection retained; fourthly and principally, by the fact of the late development of dullness in the left iliac fossa, pointing to an accumulation of fecal matter above the obstruction; and, lastly, by the general aspect and condition of the patient. The only exceptional symptom was the small quantity of urine passed. Then as to the cause of the obstruction: Dr. Fagge, in the Guy's Hospital Reports for 1868, has enumerated six heads under which most cases of intestinal obstruction may be placed. They are: 1. Plugging of the bowel by its contents. 2. Intussusception or invagination. 3. Strictures situated in the coats of the intestine. 4. Contraction situated exterior to the coats. 5. Volvuli, folds, or twists of the intestine. 6. Internal strangulations.

Accepting this classification as being the best for all practical purposes, under which of the heads were we to place the case? The habitual costiveness of the patient, with the attack twelve months previously, pointed to plugging by the contents of the bowel; the prolapse of the rectum for the last two or three months indicated intussusception; and the great liability of the sigmoid flexure to volvulus made it a very possible cause. The previous history and the symptoms in the present attack clearly excluded stricture in the bowel, contraction outside of it, and internal strangulation. Intussusception was eliminated because of the great rarity of its occurrence in the rectum, and by a careful digital examination. Of the two remaining causes it is difficult to decide which had most to do with the obstruction. Probably there may have been some amount of plugging of the bowel by its contents; but that a condition of volvulus supervened is almost certain, when we take into consideration the very fluid state of the faeces in the colon.

The dark color of the muscular and mucous coats of the intestine was an unexpected, though it ought not to have been an unlooked-for, result of internal pressure from the large fecal accumulation. The appearance was exactly that of the bowel in some cases of strangulated hernia; and until faeces began to flow there was some doubt whether strangulation, external to the intestine, had not taken place. The fact that death of the intestine may be caused by internal as well as external pressure cannot be too clearly borne in mind, and is very important when we consider the question of colotomy and the right time to perform it. In this case in fifteen days the condition of the tissues showed that relief had not come a day too soon. Perhaps in a younger subject with more perfect capillary circulation, and in others with less accumulation, and therefore less pressure, the changes toward death of the tissues might not take place so rapidly; still, the danger of early death and early rupture of the intestine, from internal pressure in cases of obstruction, ought to be sufficiently weighed and considered when delay is recommended, and Nature or medicine is trusted to yield relief. The operation is not very difficult, and, apart from concomitant circumstances, would not be very fatal. At any rate it is encouraging to find that even—as in this case—at the advanced age of seventy-five recovery is possible.

OBSTETRICS.

- 1.—*Two Successful Cases of Ovariectomy. Use of Sims's Drainage-Tubes.* By Prof. HUMPHRY, of Cambridge. Reported by Mr. R. W. EDGINGTON. [Lancet, October 18, 1873.]

E. S.—, a widow, aged fifty-two years, admitted to Addenbrooke's Hospital, Cambridge, February 6, 1873, had had three children, and been the subject of ovarian dropsy for fourteen years, during which period she had been tapped twenty-one times. The last tapping was six weeks previous to her admission. The quantity of fluid removed on these occasions varied from nine to nine and a half gallons. It was thin, albuminous, notropy nor of high specific gravity. Each tapping was quickly recovered from, and was productive of great relief and of entire subsidence of the swelling, so that there was every reason to infer that it was a single and simple ovarian cyst. Her health did not suffer much, and the proposal to remove the cyst by operation, which had been rather urged in the

earlier period of the malady, had not for some years been made; still the intervals between theappings had decreased from seven months to two months, and since the last tapping her health had rather failed. She felt weaker and had less appetite, and the swelling had returned more quickly than on former occasions, and was more burdensome. She therefore requested that the attempt should now be made to remove the cyst.

The abdomen was very prominent. It measured five feet in circumference a little above the navel, and three feet from the ensiform cartilage to the pubes. The legs and lower part of the abdomen were very œdematous; urine scanty; some diarrhœa and tendency to sickness. Pulse 100. The os uteri natural; the condition of the uterus itself could not be further ascertained.

February 7th.—As her condition did not admit of delay, the operation of ovariectomy was commenced, under chloroform, by an incision four inches long, which was made as near to the pubes as possible, for the purpose of avoiding the region of the trocar punctures, where adhesions were most to be expected. The linea alba was carefully divided, but a gush of fluid showed that the sac had been opened. The fluid was allowed to flow away, and the sac was accordingly emptied. It proved to be adherent to the whole of the fore part of the abdominal wall, and some difficulty was found in tearing through the adhesions. This was, however, ultimately done, and the sac was removed without enlarging the incision first made, and with very little exposure of the contents of the abdomen. The pedicle was long. A clamp was applied. Two vessels in the pelvis bled briskly. These and four others on the inner surface of the abdominal wall were tied with catgut ligatures, which were cut off close to the knots. There was still oozing from many points into the abdominal cavity; accordingly, the precautionary plan suggested by Dr. Marion Sims was adopted. A trocar with canula was passed from the recto-uterine pouch of the peritoneal cavity into the vagina; a long perforated drainage-tube was then introduced through the canula, and, the latter having been withdrawn, the tube was left, one end being brought externally through the vagina, and the other through the lower part of the wound. The two ends were secured by being tied together. The wound was closed with catgut sutures, and pads and bandage were placed on the abdomen.

After the operation there was no great amount of shock, neither did the temperature at any time exceed 102° . The looseness of the bowels, which existed before the operation, continued for some days. During the first three days a large quantity of sero-sanguinolent fluid passed through the drainage-tube. This stopped completely, and the tube was removed on February 23d. The clamp separated on the 25th. The external wound healed without trouble, and the patient recovered without any unfavorable symptom.

In another case, since operated upon by Prof. Humphry in private, the same plan was adopted, and with the like good result. The patient was a healthy woman, aged sixty-two years, living at Brandon, under the care of Mr. Thompson of that place, with enormous distention of the abdomen and œdema of the lower limbs and lower part of the abdomen. She had not been tapped. She was a person of good spirit, who calmly determined to undergo the operation for removal of the cyst, as the weight and distress were no longer endurable. The sac was extensively adherent to the front of the abdominal wall and in the pelvis, so that, as in the preceding case, it was opened in making an incision through the linea alba, and the contents of the sac at once poured out. The fluid was viscid, but not dark-colored. The adhesions were so close and tough that it was difficult to distinguish the wall of the sac from that of the abdomen, and to effect the separation. The latter was, however, at length done with the

fingers. There were no adhesions to the omentum or to the abdominal or pelvic viscera. The pedicle was sufficiently long to admit the easy application of a clamp. A few vessels were tied with catgut ligatures. Still there was some oozing into the abdominal cavity. Accordingly, a drainage-tube was inserted by means of a large trocar passed from the abdomen through the recto-uterine pouch into the vagina. One end was brought out through the wound, the other through the vagina, and the two were tied together. The wound was closed with catgut sutures, and a pad and bandage were placed on the abdomen. Bloody fluid escaped through the tube during the first two or three days, and after six days the tube was removed. Not a single bad symptom of any kind occurred, with the exception of some pain in the body, which was at once relieved by a small dose of nupenthe, administered by Mr. Thompson, under whose care she remained. The clamp came away, and she quickly and completely recovered.

Miscellany.

Rank of Medical Officers in the United States Army.—Surgeon-General Barnes, in his Annual Report to the Secretary of War, for the year 1873, urges the necessity for the repeal of that part of the army appropriation bill of 1869 which prohibits promotions and appointments in the medical corps. Under this law the medical officers of the army are placed at an obvious disadvantage, as compared with officers in other branches of the service. The injustice of this distinction is so conspicuous that, unless speedy action is taken by Congress, the efficiency of the medical corps will be very seriously impaired for many years to come. The law preventing promotions has now been in force four and a half years, and the result is that there are sixty-four vacancies in that corps, fifty-three of them being in the grade of assistant surgeon. Young men of superior education and ability cannot be expected to enter the service under the existing law, but will seek other and more promising fields for the employment of their talents. The Surgeon-General again expresses his opinion that "very serious and increasing injury has resulted to the service" from this cause, and that, even were the law repealed immediately, it would be "the work of several years to restore the corps to the necessary standard of numbers as provided for in the act of Congress approved July 28, 1866." This is a matter in which the whole profession is very deeply interested, and we earnestly hope that the memorial on the

subject presented by the American Medical Association, and the recommendations embodied therein, will receive the attention of Congress at a very early day. We give below the draft of a law on the subject, submitted by the committee of the American Medical Association :

SECTION 1. *Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled,* That so much of the sixth section of the act entitled "An act making appropriations for the support of the army and for other purposes," approved March 3, 1869, as forbids promotions and appointments in the medical department of the army be, and the same is hereby, repealed.

SEC. 2. *And be it further enacted,* That the organization of the medical department shall be as authorized in the seventeenth section of the act entitled "An act to increase and fix the military peace establishment of the United States," approved July 28, 1866: *Provided,* that from and after the passage of this act, the Chief Medical Purveyor and four Assistant Medical Purveyors, now authorized by law, shall have the rank, pay, and legal allowances of colonels; and *provided, further,* that surgeons who have served thirty years and upward, from the date of their original entry into service, shall have the rank, pay, and legal allowances of colonels; and surgeons who have served less than thirty and more than twenty years, from the date of their original entry into service, shall have the rank, pay, and legal allowances of lieutenant-colonels, and all other surgeons shall have the rank, pay, and legal allowances of majors, as now authorized by law; and the rank, pay, and legal allowances of assistant surgeons shall be as now authorized by law; and *provided, further,* that the foregoing provisions of this act shall apply to all officers who may hereafter be promoted in the medical department.

SEC. 3. *And be it further enacted,* That nothing in this act shall be construed to permit the appointment or promotion of any person in the medical department until he shall have passed the examination now required by law.

SEC. 4. *And be it further enacted,* That all laws and parts of laws inconsistent with the provisions of this act be, and the same are hereby, repealed.

Appointments, Honors, etc.—At the last quarterly meeting of the trustees of the College of Physicians and Surgeons of this city, Dr. John G. Adams was elected trustee, in place of John Torrey, M. D., LL.D., deceased. Every Kennedy,

M. D., has been elected President of the Dublin Obstetrical Society for the ensuing year. The Society numbers 142 ordinary and 12 honorary members. The acceptance of the postmaster-generalship by Dr. Lyon Playfair will create a vacancy in the seat for the Universities of Edinburgh and St. Andrews. The Copley Medal and the two Royal Medals in the gift of the Royal Society have for the year 1873 been awarded as follows: The Copley Medal to Prof. Helmholtz, the distinguished physiologist, physicist, and mathematician, of Berlin; a Royal Medal to H. E. Roscoe, F. R. S., Professor of Chemistry in Owens College, Manchester; and a Royal medal to Dr. Allman, Professor of Biology in the University of Edinburgh. Dr. Edward H. Sieveking has received the appointment of Physician Extraordinary to the Queen. Prof. Hyrtl, of Vienna, has announced his intention of resigning his chair next spring. Dr. Sims's article on ovariectomy, published last year in the *NEW YORK MEDICAL JOURNAL*, has been translated into the German language by Dr. Hermann Beigel.

Resolutions on the Death of William C. Roberts, M. D.—

At a meeting of the New York Academy of Medicine, held in the lecture-room of St. Mark's Church, December 12, 1873, a committee, consisting of Drs. G. M. Smith, Oliver White, and John L. Vandervoort, presented the following preamble and resolutions, which were unanimously adopted:

Whereas, It has pleased an all-wise Providence to remove by death William C. Roberts, M. D., Vice-President of the New York Academy of Medicine: therefore—

Resolved, That the Fellows of the Academy are called upon to mourn the loss of an associate, loved for his social qualities, respected for his courtesy and rectitude, and honored for his erudition.

Resolved, That the Fellows will ever pleasantly recall the brilliancy of his wit, the readiness of his anecdotal illustrations, the richness of his poetical and classical learning, and the happy fluency of his *extempore* speech.

Resolved, That the numerous productions of his pen will not only be an enduring monument of his industry, but will also permanently perpetuate the clearness of his acumen, the force of his logic, and the ripeness of his scholarship.

Resolved, That the Fellows attend his funeral in a body, and that a copy

of these resolutions be engrossed in the minutes of the Academy, be presented to the family, and be printed in the medical journals of this city.

AUSTIN FLINT, M. D., *President*.

W. T. WHITE, M. D., *Secretary*.

Resolutions on the Death of Dr. Underhill.—At a joint meeting of the New York Academy of Medicine, the Medical Society of the County of New York and the Medical Library and Journal Association, held in the lecture-room of Trinity Chapel, December 11, 1873, the following preamble and resolutions, prepared by Dr. Joel Foster, were unanimously adopted :

Whereas, It has pleased our heavenly Father in his all-wise providence to remove by death our beloved brother, Dr. Alfred Underhill :

Resolved, That while we feel and lament the great loss sustained by the medical profession, the Christian Church, the institutions of charity, and the families to whom his life was devoted, we humbly bow to the Divine will in this affliction, and acknowledge the goodness that sustained him in his painful and fatal illness, and enabled him to complete his earthly career, as he had long lived among us, strengthened and consoled by religion, and constantly enjoying the love and tender regard of family and friends.

Resolved, That our sympathy and sincere condolence are hereby tendered to the family of the deceased. In behalf of the medical profession we gratefully point to his unceasing benevolence and patient devotion to duty, having filled with honor the highest offices in our societies.

Resolved, That a copy of these resolutions be transmitted to the family of the deceased, and to the *Medical Record* and *New York Medical Journal*.

ELLSWORTH ELIOT, M. D., *Chairman*.

W. T. WHITE, M. D., *Secretary*.

Hudson River State Hospital for the Insane.—In our report of a visit of inspection to this hospital, in our last issue, we inadvertently omitted a part of the resolutions of the committee, which were as follows :

Resolved, 1. That, having made a careful inspection of the building and grounds of this institution, we believe the soil and site, on high ground, commanding extensive and beautiful views, is one of the most desirable that could have been selected.

2. That we have been impressed by the simplicity, solidity, thoroughness, and completeness of its structure.

3. That the ample supply of water and perfect provision for drainage are every thing that can be desired.

4. That we believe the design of its internal arrangement, the dimensions of its apartments, the general effect for cheerfulness and convenient and beneficial classification of its patients, are all that the present knowledge in hospital construction and the principles of sanitary architecture can suggest or demand. We also believe that the institution has been commenced under enlightened views of the requirements of the insane, and that no diminution of the scale of liberal accommodation, or excellence of material, or thoroughness of workmanship, would be wise or expedient.

5. That the number of patients necessarily crowded into some of the wards, exceeding the accommodations yet provided for them, renders imperative a speedy enlargement of the building.

The Academy of Medicine.—The twenty-sixth anniversary of the founding of the New York Academy of Medicine was duly celebrated on Thursday evening, November 20th. The annual address, on "Parasitic Growth," was delivered in the hall of the College of Physicians and Surgeons, corner of Twenty-third Street and Fourth Avenue, by Dr. John C. Dalton, after which the members repaired to the Ashland House to partake of a supper. The toasts were as follows:

"New York Academy of Medicine—*Una fides altare commune*—gathered on this twenty-sixth anniversary, its Fellows renew their expression of veneration of the wisdom of its founders, and renew their pledges to maintain the noble purposes for which it was designed." Responded to by President Flint.

"Divinity, Law, and Physic, triplets nurtured 'by Faith, animated by Hope, inspired by Charity." Responded to by Dr. Post for the clergy, Edgar S. Vanwinkle for the bar, and Dr. A. M. Bell, of Brooklyn, for the physicians.

"The Building Fund." Responded to by Dr. James Anderson.—*Medical Record*.

New York Physicians' Mutual Aid Association.—The annual meeting of this Association was held November 13, 1873, when the following officers were elected for the ensuing year: James Anderson, M. D., President; W. W. Reese, M. D., first Vice-President; Austin Flint, M. D., second Vice-President; S. T. Hubbard, M. D., Treasurer; W. R. Gillett, M. D., Recording Secretary; S. Ayres, M. D., Assistant Secretary; William H. Thayer, M. D., Corresponding Secretary. Trustees for one year: George A. Peters, M. D., Er-

skine Mason, M. D., Ernest Krackowizer, M. D. Trustees for two years: Joseph Kammerer, M. D., J. R. Van Kleeck, M. D., W. J. Percell, M. D. Trustees for three years: George I. Bennett, M. D., M. Herzog, M. D., J. S. Monell, M. D. The Association is increasing in numbers, and has a permanent fund of \$1,345.50. Five deaths have occurred during the past year.

Adulteration Extraordinary.—A Dublin milkman has been fined seventy-five dollars for selling as milk a mixture of ninety per cent. of water with ten per cent. of milk. The magistrate remarked that he did not inflict the full penalty of one hundred dollars, because he wished to leave himself a margin to meet the case of any dealer who might carry adulteration to a yet further pitch!

By way of contrast to this case, we read that, in a recent examination of six samples of milk by the public analyst in a part of London, one sample was found to be pure, while the remaining five contained an excessive quantity of cream.

Abuse of Medical Charities.—The growing abuse of the gratuitous relief afforded by the medical charities of Birmingham, England, has led to the appointment of a committee to establish an organization for the purpose of inquiring into the circumstances of all applicants for relief, except in cases of emergency. The plan is a wise one, and might be imitated here and elsewhere, with great advantage both to the profession and to really needy applicants for gratuitous advice and treatment.

Puerperal Fever in Australia.—*The Australian Medical Journal* for July speaks of the prevalence, apparently for the first time in that country, of an epidemic of puerperal fever, which began in May, and continued during the two following months. At a meeting of the Medical Society of Victoria, Dr. L. J. Martin read a paper on the subject, and endeavored to prove, by a number of observations, the atmospheric origin of the disease.

A Journal of Electrology.—Dr. George M. Beard announces the publication of a new journal, to be devoted to electrology

and neurology, of which the first number is promised early in the present year. The aim of the editor will be to make it both scientific and practical. If sufficiently practical, it will doubtless be acceptable to a large class of practitioners; but exclusively scientific journals die young in this country.

The New England Female Medical College.—The union of this college with the medical department of the Boston University (homœopathic) settles the question of the recognition by the regular profession of graduates of the former institution. The Massachusetts Medical Society is thus mercifully spared much fruitless discussion.

Students at the German Universities.—The entries at the German universities for the year 1873-'74 are 7,467; 3,904 being for the winter, and 3,563 for the summer session. The number of medical students is 2,479. The total number is 851 less than the previous year, when it was 8,318, there being a falling off of 444 in the medical entries alone.

Association of American Medical Editors.—The following officers have been chosen for 1874: President, Dr. W. K. Boling, of Nashville, Tenn.; Vice-President, Dr. W. S. Edgar, St. Louis; Secretary, Dr. F. H. Davis, Chicago, Ill.; Committee on Prize Essays for 1874, Drs. N. S. Davis, Chicago, J. P. Logan, Atlanta, and J. M. Toner, Washington.

The Guinea Fee in London.—The medical gentlemen of London are agitating the question of increasing the customary fee of one guinea, to meet the general advance in prices of living. The present fee was established at a time when, it is claimed, the guinea was equivalent to about three times the amount at the present day.

Albany County (N. Y.) Medical Society.—The following officers were elected at the annual meeting of this Society, held November 11th: President, John Swinburne, M. D.; Vice-President, H. W. Steenburgh, M. D.; Secretary, F. C. Curtis, M. D.; Treasurer, W. H. T. Reynolds, M. D. The remainder of the officers continue the same as last year.

A Demoralizing Law.—According to the *Boston Medical and Surgical Journal*, the liquor law at present in force in Massachusetts has “produced nothing but opium-eating, secret drinking, hypocrisy, black-mail, and State constables.” The law will probably be modified or repealed by the new Legislature.

A Wonderful Hospital.—The Boston Lying-in Hospital has a rival bearing the same name, and appealing to the public by claiming to have had two hundred and six applicants for admission within three days.

The Copenhagen Hospitals.—The *Medical Times and Gazette* of November 29, 1873, contains an interesting report on the hospitals of Copenhagen, from which we make the subjoined extracts :

The Frederiks-Hospital contains four hundred beds, of which about one hundred and fifty are for surgical cases, under the care of Dr. Saxtorph, the remainder being medical, and in charge of Prof. Wirth and Dr. Tahlerup ;

The antiseptic system of dressing is adopted in its most minute details, and that with the best results, according to Saxtorph. We saw cases of amputation, excision, compound fracture, abscess, etc., all treated antiseptically, and all looking well. Saxtorph says he has used carbolic acid ever since it was introduced by Lister, and sees no reason for discontinuing it. In one case of gunshot-wound of the leg, admitted in a very bad state, with secondary abscess and septicæmic diarrhœa, carbolic acid was applied locally, given by the mouth, and administered in enemata. The limb was subsequently amputated, and the patient is now doing well. Erysipelas very rarely breaks out in the hospital, although cases are not uncommonly admitted. Saxtorph treats burns by wrapping up the part closely in cotton-wool and leaving it as long as it does not stink. Simple fractures are, as a rule, put up in starch-bandages after the swelling has subsided. Hip-joint disease is generally treated by pulley extension. Several cases of chronic scrofulous disease of other joints were fixed in a starch bandage, while cod-liver-oil was being given internally. Excision had been performed a month before in a case of chronic hip-disease with fistulæ, but, in spite of the antiseptic treatment, purulent discharge had returned in abundance. It is worthy of note that of some ten cases of excision of the hip in Copenhagen, of

which a record is kept, not one is now alive—why, it is difficult to say. A case of chronic effusion into the knee had been punctured, and the joint immediately put in a starch-bandage; the result promised to be good. Amputations, as far as we saw, are very successful in the hands of Prof. Saxtorph, the stumps healing well and without the conical look and exposed bone so often visible in German surgical practice. Stone in the bladder is common in Denmark, and Saxtorph prefers operating for it by lithotomy. He adopts the lateral incision, and uses the blunt gorget in entering the bladder. Skin-grafting is regularly employed, and with good results. Poultices, such as are seen in the London hospitals, are not to be found in Saxtorph's wards, where warm-water fomentations and arnica "flowers" are alone used.

The surgical out-patients at the Clinical Hospital are attended to in the "clinic" or operating theatre. The number is very small.

The Commune Hospital numbers eight hundred beds. The practice or service in this hospital is a mixed one—an arrangement which seems less strange when thus expressed than it does to the eye of the visitor. It means that medical and surgical cases are found side by side in one ward, and visited by the same medical attendant, who treats in succession typhoid fever, fracture of the femur, cancer of the stomach, and the stump of an amputated forearm. We wish to record some of the cases seen under the care of Prof. Rasmussen, and his method of treatment. Dilatation of the stomach—a disease so seldom observed (or recognized?) in this country—was being treated very successfully by washing out the viscus with a siphon stomach-pump. Phthisis is treated with warm infusions of malt; Rasmussen questions the value of cod-liver oil. Emphysema and asthma in Copenhagen seem to be relieved by iodide of potassium. Typhoid fever is being treated by Rasmussen with sulpho-carbolate of soda, with quinine in small doses in some cases, and with cold baths (16° to 18°) whenever the temperature exceeds 41° . The results of these various means are uncertain, for, as Rasmussen wisely remarks, no two epidemics of typhoid fever are alike. In his surgical practice it was interesting to find Rasmussen of a different opinion from his colleague, Saxtorph, in the Clinical Hospital, as regards the value of carbolic acid. The former professor now constantly uses a watery solution of sulphurous acid, and prefers this to all other dressings, carbolic acid included.

There are altogether five services at the Commune Hospital—namely, those of Drs. Holmer, Rasmussen, Brunnicke, Aaristrup, and Engelstet. The first gentleman's service is purely surgical, and the last has charge of syphilitic and cuta-

neous cases. The department of dermatology and syphilis is a university clinic, attended once a week during the sixth year of medical study. Each of the services has connected with it three or more resident assistants, the chief of whom probably divides the work of the daily visit with the professor. A journal is kept of every case admitted into the hospital.

We may add a few notes of the practice of Prof. Holmer, the surgeon in the Commune Hospital. Holmer agrees with Saxtorph, and disagrees with Rasmussen, on the value of carbolic acid in the treatment of wounds. This surgeon adopts Lister's antiseptic system completely, and believes in its efficacy. Two instructive cases of tracheotomy for croup were seen under Holmer's care in boys of three and six years respectively. A special ward is employed for those tracheotomy cases, filled with warm, moist air by means of pipes. Holmer has operated on no fewer than fifty-one cases of "diphtheritic laryngitis," and has been blest with fifty per cent. of recoveries.

Amputation by India-Rubber Ligatures.—On Friday, November 21st, Sir Henry Thompson performed an operation upon the female breast, which, so far as we are aware, is perfectly new to surgical practice in England. Previous to the entrance of the patient to the theatre, Sir Henry stated that the plan he was about to adopt had been brought recently under his notice during a visit to Vienna by Prof. Dittel. An accident, as it were, suggested the treatment to Dittel, who now for some time has employed it in over two hundred cases, such as of tumors of the breast, in removing the testes and even limbs, and in the cure of *fistula in ano*. Having been called upon to see a young girl dying from meningitis, the following account of the case was given him: The patient, who had been constantly reproved by her step-mother on account of the untidy state of her hair, was advised some weeks before her death to get a tightly-fitting net for her head, and to wear it night and day. This she did till the last, when it was found that the elastic band of the net had cut its way through the scalp and cranium, and was resting on the meninges of the brain, fatal inflammation of which it had set up.

The immense power for effecting the solution not only of the soft tissues of the body, but even of bone, having, by the constantly contracting pressure of an elastic band, been thus so remarkably proved, Prof. Dittel resolved to attempt in certain cases to substitute this power for the knife in surgical operations.

The application of the treatment to the mammary gland

by Sir Henry Thompson we will now describe: The patient, a woman of about fifty-three years of age, had for ten years been conscious of a tumor in the right mamma. When first noticed it was seated near the nipple, below and to its outer side, and was of the size of a walnut. As it was discovered about the time of her confinement with her last child, which died soon after its birth, she was led to regard the tumor as a "distended milk-duct." It has gone on increasing, however, though very slowly, and about eight weeks ago the skin covering the tumor commenced to ulcerate. At the time of the operation the histological characters of the tumor were doubtful. It was of the size of a large orange, ulcerated on the surface, somewhat pendulous, and freely movable upon the subjacent tissue. The patient was a robust and healthy-looking woman. Chloroform having been administered, Sir Henry drew the mamma forward from off the pectoral muscle, and then, with a very long, strong, and slightly curved Liston's needle, transfixed the submammary tissues. Through the eye, near the point of the needle, a long piece of very elastic India-rubber tubing, about the thickness of stout whipcord, together with a long silk ligature, was passed. The elastic ligature was then divided, and the needle withdrawn. Each half of the elastic ligature was tied very tightly, so as to embrace one-half the mamma, inclusive of the skin. In fastening the elastic ligature a piece of silk ligature was placed at right angles to the elastic between the skin and the knot, and, while the single knot was tightly drawn, the silk was tied around it by an assistant to prevent it slipping. A double knot was then made, and this was secured by again tying the silk around the elastic.

The long silk ligature, which had been passed with the elastic tubing through the submammary tissue, was then removed. The purpose of passing this was precautionary, in order that another piece of elastic might be drawn along the same track in the event of either half of that which was first passed breaking. Another precaution very necessary to take is, to hold the elastic firmly at the time of dividing it and while withdrawing the needle, otherwise the contractility of the tubing will cause its disappearance through the track made by the needle.

The time likely to ensue before the entire separation of the breast is eight or nine days. The pain excited during any portion of this time is remarkably slight. Sometimes a little pain is suffered for a day or two. In the case of the patient now referred to, there was no pain after the first twenty minutes from the time of recovery from the chloroform,

and the suffering during this brief period was not at all severe. —*Medical Times and Gazette*, November 29, 1873.

Cure of Toothache by Electricity.—Julius Althaus, M. D., in the *British Medical Journal* of November 1, 1873, makes the following practical suggestions :

Now that, thanks to the activity of instrument-makers in meeting the increased professional demand for constant batteries, fairly effective instruments of this kind are becoming household goods of the medical man, and are within the reach of even slender purses, I wish to suggest a routine recourse to the constant current for that very common affliction of mankind—toothache. I have never been consulted with the view of treating toothache by electricity, but have for many years past incidentally used the continuous current in a large number of such cases, and come to the conclusion that it is a ready and most effective means for the cure of odontalgia. Without wishing to enter here into the pathology of this "small misery," I may say that the mere decay of teeth appears, as a rule, only indirectly productive of toothache, which, indeed, is very frequently experienced in teeth that are perfectly healthy, and in decayed teeth not always, but only under certain contingencies. Chills and depressing emotions would seem to be the chief exciting causes of toothache. Now, the terminations of the dental nerves are more exposed to chills in decayed than in healthy teeth; and, under depressing emotional influences, the weak points of the system are chiefly apt to suffer. These considerations would explain why toothache is more frequently felt in bad than in good teeth.

What is the best mode of galvanization for toothache? After numerous trials of various modes, I have come to the conclusion that the induction of anelectrotonus of the dental nerves, with complete avoidance of catelectrotonus in their neighborhood, answers best. Pflüger has shown that a continuous current, which traverses a certain length of the nerve, divides this latter into two physiologically different sections or zones, one of which shows the condition of increased excitability or catelectrotonus, while the other is in a condition of diminished excitability or anelectrotonus. The zone of increased excitability is in the neighborhood of the cathode, while the zone of diminished excitability is in the neighborhood of the anode. The condition of increased excitability is propagated from the cathode toward either side, and the condition of diminished excitability is propagated from the anode toward either side. This alteration of excitability in the extra-polar portions of the nerve diminishes in the same ratio

as the distance at which they are from the electrodes increases, and at a certain distance it disappears altogether. Cyon has shown that Pflüger's researches, which were made on rheoscopic frogs' limbs, hold good for the nerves of the living man likewise; and the systematic production of catelectrotonus and anelectrotonus, for the purpose of increasing or diminishing the excitability of diseased portions of the nervous system, has thus been shown to be a therapeutical possibility.

These principles may be utilized in the case now under consideration by placing the large anode, armed with a moistened sponge, to the suffering cheek and jaw, and the cathode to the palm or the back of the hand. In this way, both the second and third branches of the fifth cerebral nerve are placed into the condition of anelectrotonus, while the influence of the cathode is neutralized by its great distance from the suffering parts. One application of a gentle but plainly perceptible current, continued for five minutes, is sufficient for curing almost every toothache; but, in very bad cases, a second application may be required for effecting the desired result. This may be had the same day, if practicable.

The same principles apply to the galvanic treatment of the different forms of neuralgia, which yield readily to the induction of anelectrotonus, if practised sufficiently early. In the later stages of neuralgia, the phenomena are not so simple as in the commencement of it, and the treatment then becomes more complicated, and less readily successful.

A Test for Ringworm.—In the *British Medical Journal* of November 1, 1873, Dr. Dyce Duckworth has the following remarks on the diagnosis of ringworm:

I think it will be conceded by all practical dermatologists, that there are cases of true ringworm, and also phases of this disorder which are not immediately and distinctly recognizable, or which, at least, require some careful investigation before a decided opinion is expressed about them.

It is in such instances, and also for the determination of the amount of parasitic disease in any given patch, that I venture to recommend, as an aid to the diagnosis, the application of chloroform to the affected part of the scalp.

A few drops are to be poured upon the head of the patient, who must be placed in a good light, between the operator and the window. On evaporation of the chloroform, the affected hairs, generally short, broken off, and twisted at their extremities, are seen to become of a yellowish-white color, opaque, and like fine filaments of a vegetable lichen. The healthy

hairs are quite uninfluenced by the chloroform. Not only upon the hairs is this change observable, but the skin in the immediate neighborhood is commonly affected in a similar manner. Small whitish masses are seen upon the scalp, and especially at the point of emergence of the hairs. This effect is due, I believe, to *débris* of the parasite mixed up with the sebaceo-epithelial matter extruded from the hair-follicles. The parts look as if sprinkled with a film of highly-divided sulphur powder, reminding one of vines that have been washed with sulphur-lotion for grape-disease.

If ether be used, instead of chloroform, no such change takes place. And if the scalp and hairs be well rubbed and cleansed from sebaceous matters by ether, the specific effect is at once produced on the subsequent addition of chloroform.

As already stated, the opaque hairs become manifest immediately on the drying up of the patch, and thus the local application of chloroform becomes a perfectly accurate test of the infection, or the reverse, of the part. The change in appearance is generally very striking, and may be observed by an untried eye.

If these opaque hairs be examined microscopically, the spores can still be clearly seen in their interior. The shaft is desiccated, the oily matters are removed, and the fibre-cells are found somewhat split up at the margins. It would seem that the spaces which occur in the shaft, as the result of sporadic intrusion and development, and consequent disintegration of fibre-cells, become filled with air on the evaporation of the chloroform which had permeated the entire texture of the shaft. In this way I would in part account for the optical change which ensues, and I think it may be also partly due to some direct action of chloroform upon the mycelium and spores of the tricophyton. I believe that this action of chloroform upon parasitically affected tissues has not been observed before; at all events, the fact is not known to any vegetable histologists with whom I have communicated.

Successful Removal of the Spleen.—In the *Raccoglitore Medico*, Dr. Sonsino gives an account of a case in which, on June 20th, Dr. Attilio Urbinato, of Cesino, removed an hypertrophied and mobile spleen. The incision was made in the middle line, and prolonged above the umbilicus, being at least seven inches in length. The operation was performed without much difficulty. After tying three small cutaneous arteries, opening the peritonæum, and drawing aside some loops of intestine, the spleen was seen, free from all abnormal adhesions, and of enormous size. At the inferior part was seen the gastro-splenic epiploon, which was adherent; and the vessels here

were extremely dilated. At the upper part was seen the lower portion of the pancreas. The epiploon was detached, and the vessels tied. The ligatures, seven in number, were left inside without further precaution. The few adhesions of the pancreas were overcome without difficulty, simply by means of the finger. The largest vessels, and the connective tissue which surrounded them, were secured by a metallic loop and hempen ligature. The "toilette" of the abdominal cavity was made with great care. The patient lost but little blood. The ligatures of the vessels tied were passed out between the sutures, of which there were five deep and five superficial. The spleen weighed $2\frac{1}{2}$ pounds. The operation lasted an hour; the patient bore the chloroform well, and subsequently appeared to be progressing favorably, but died of peritonitis three days after the operation.—*British Medical Journal*, October 4, 1873.

How to use the Actual Caутery.—Dr. J. S. Camden, in a communication to the *Medical Times and Gazette*, makes some practical observations on the use of the actual cautery. He says: "I see in Dr. Fayrer's work on the 'Thanatophidia of India' that the actual cautery was used unsuccessfully (which in another place he calls a *red-hot* iron). This is not what I was always taught and had seen as actual cautery. I consulted 'Cooper's Surgical Dictionary,' edited by Lane. There it is called an iron in a state of incandescence, which is, according to Maunder, incipient white heat. Prof. Symes in his lecture calls it a red-hot iron. I also made many inquiries of medical friends, and all spoke of it as a red-hot iron. Having twice assisted in using and once used actual cautery, I hope I know something on the subject. When actual cautery is to be used, the iron must be heated till it is really of a white heat, and looks almost as white as white paper. If then applied, it destroys the part instantaneously, giving no pain; but it must be removed quickly on the heat decreasing, and then another iron applied. Several irons are required for use, and a fierce fire kept up by bellows, till your object is attained; but, if a red-hot iron only is used, the agony is intense, as we all know who have touched it. The first time I saw it used, on a girl of fourteen years, no pain was given, to my great astonishment; the second time, on an elderly person (both for fungus in the upper maxillary bone), her screeching was fearful, till I told the operator his irons were not half hot enough. He then requested me to heat them properly, which being done, not a murmur was heard. The irons were being used only red-hot. The last time was opening four or five

sinuses in a favorite horse's shoulder. He never flinched, and scarcely seemed aware of what was being done. The only thing he noticed—for he never moved—was the hissing made by the destruction of the skin. Actual cautery is painless. I would suggest using—to obtain the white heat for actual cautery—a large spirit blow-pipe."

Destruction of One Cerebral Hemisphere without Functional Disturbance.—The eminent Italian surgeon, Porta, brought before the Institute of Lombardy, on the 19th of December, 1872, the case of a man who, in consequence of a severe injury, lost the whole of the right hemisphere of the brain. The unconsciousness lasted a few hours, but when the patient recovered his senses, he recollected being picked up and taken upon a cart to the hospital. He staid two months and a half in the institution, the skull exfoliated, and the wound became fungous, when he claimed his discharge, though affected with paralysis on the left side, which had occurred immediately after the infliction of the injury. He subsequently applied at the clinical wards of Pavia, where Dr. Porta had an opportunity of studying the case. Eighteen months had elapsed since the accident, and twelve months since the closure of the wound. The author minutely describes the integrity of the intellectual functions, the amount of paralysis in the upper and lower limbs, and concludes by dwelling on the three following points: 1. That the encephalon is a double organ composed of two equal parts, and that, one being destroyed, the other survives without functional disturbance. 2. That in the different spheres of the cerebral, medullary, and nervous systems, special and diverse functions are perfectly isolated and localized, the disturbance of the functions following localized injuries. 3. That, in the present case, electricity diminished the paralysis of the arm, and that the improvement would have been more marked had the treatment been sufficiently prolonged.

The case is confirmatory of the well-known experiments on the lower animals, from which a whole hemisphere was removed.—*Lancet*, September 6th.

Neuralgic Ulcer of the Leg.—M. Terillon recently related to the Société de Chirurgie two cases of ulcer of the calf of the leg, attended by excessive pains, which yielded to no means employed, until an excision of a portion of the sciatic nerve had been performed. He refers to a case of M. Verneuil's, occurring in a young girl, and in which the pains were so incessant and had so exhausted the patient's powers, that ampu-

tation was had recourse to. The ulcer reappeared in the stump, and the pains recurred. Excision of a portion of the sciatic nerve caused the pains to disappear as by enchantment, and the ulcer rapidly cicatrized. These facts have led M. Terillon to conclude that the primary source of the ulcer was an altered condition of the sciatic nerve. M. Ledentu, reporting on the paper, observed that he could not adopt this conclusion absolutely, for he had himself lately met with a case of neuralgic ulcer of the leg, in which the pain yielded to hypodermic injections. M. Verneuil, too, observed that conclusions from his case would be premature, as the patient is now suffering from another relapse.—*Union Médicale*, November 4, 1873.

Transplantation of Marrow in Subperiosteal Amputations.—A paper on this interesting subject was read at a recent sitting of the Paris Academy of Sciences by M. G. Felizet. The author's results are based upon the observation of a case of amputation on a young man of twenty-six years, and on various experiments made upon dogs. They may be briefly summed up as follows: 1. Transplantation of bone-marrow into a fold formed by the periosteum of long bones presents the most favorable conditions for the success of grafting. 2. Occlusion of the marrow thus grafted, under a fold completely sutured, has the effect of producing the cure of osseous stumps by an anatomo-pathological process identical with that which leads to the formation of callus in simple fractures. 3. Accidental opening of the fold does not render grafting of the marrow impossible—it only renders it incomplete by favoring the exit of a portion of the transplanted tissue. It may induce osteomyelitis, but in the same way as simple section of bones, in the open air, in ordinary amputations.—*Lancet*.

Eucalyptus Globulus.—A paper by M. Gimbert on the cultivation of the *Eucalyptus globulus* was read at the last meeting of the French Academy of Sciences. M. Gimbert has not only unbounded faith in the febrifuge qualities of the plant, but asserts that, when cultivated in a fever-stricken locality, it destroys, by the exhalation of camphorous vapor, all miasmatic influence, and by its singular capacity of absorbing water is capable of converting a pestilential swamp into a dry and healthy district. The data given from the results of extensive experiments in various unhealthy parts of Algeria are apparently sound and reliable, and are worthy the attention of our government. Sierra Leone offers an excellent field for the cultivation of the *Eucalyptus globulus*, and who knows but

that a few years' benign influence of the plant will convert the "white man's grave" into a health-resort as fashionable and as much sought as the Riviera! We greatly fear, however, that the qualities ascribed to the tree are ideal, and that in reality it is as void of protective power as the fabled upas-tree is innocent of malign influence.—*Lancet*, November 1, 1873.

Caoutchouc Electuary as a Remedial Agent.—Dr. T. R. Varick recommends caoutchouc as a remedial agent, in preference to cod-liver oil, in certain cases of pulmonary tuberculosis, chronic bronchitis, the winter cough of old people, and in chronic rheumatism. Prepared in the following manner, the dose is a teaspoonful three times a day, about two hours after meals:

Solution of Caoutchouc.

R. Caoutchouc (in thin slices),	℥ j.	
Ol. terebinth.,	℥ ij.	M.

Macerate until solution is effected, and strain through coarse muslin.

Electuary of Caoutchouc.

R. Solut. caoutchouc,	3 ij.
Sacch. alb.,	℥ jss.
Mellis (strained),	℥ ijss.

This mixture should be of opaque yellow color, and thick enough to run very slowly off a spoon. It contains about two grains of pure caoutchouc to each teaspoonful.—*Medical Record*, November 15, 1873.

Fatal Case of Tobacco-Poisoning.—A fatal case of poisoning by tobacco is mentioned in the naval medical report just issued. It occurred in the person of a boy of the Implacable. He had been frequently punished for chewing tobacco, and had often presented himself at the sick-bay complaining of debility, giddiness, and faintness, which were traced to the poisonous influence of tobacco. On two occasions, he had swallowed pieces of tobacco to prevent detection. On the night of his death, he went to his hammock, telling his messmates that he felt sick. About ten minutes afterward, the occupant of the next hammock to his heard him breathing stertorously, and immediately tried to awake him. Finding he could not, he was conveyed to the sick-bay, and at once seen by a medical officer, who found him moribund. The pupils were insensible to the influence of light; and the pulse, which was scarcely perceptible, in three minutes ceased to beat. On *post-mortem* examination of the body, two small pieces of tobacco were found in the stomach.—*British Medical Journal*, November 1, 1873.

Evacuation of a Portion of Bowel.—The above case occurred in the wards of Dr. Demarquay, at the Hospice Municipal. A boy of fifteen was taken with a violent fit of vomiting, colic, and diarrhœa, after eating some sugar-plums painted in red, green, and blue. The stomach was tense and swollen, and six worms, together with three bits of a fleshy substance, like boiled liver, were thrown up. Twenty other worms were afterward successively vomited. On the fifteenth day the patient evacuated a piece of thickish, slimy membrane, about an inch broad and twenty inches long, and into which the finger could be introduced like a glove. After this the boy went on lingering, with frequent attacks of diarrhœa, and, though the appetite was good, he gradually lost flesh. The attacks were doubtless occasioned by the fecal mass reaching the retracted portion of the soldered bowel. The patient died, but a *post mortem* was not allowed to be performed.—*Lancet*, October 11th.

Conception occurring about Twenty Days after Delivery.—The *Clinic*, of November 8th, indorses the following communication by Dr. John Bertolett :

At 7.45 o'clock A. M. of December 12, 1869, I delivered Mrs. M. of a full-grown child, female, that lived but a few hours.

On the 4th day of October, 1870, I was again called in the early part of the night to this same patient in labor, and at 12.30 A. M., in one hour after entering the house, delivered her of a full-grown, healthy male child, weighing eight and a half pounds, that lived to die of an acute disease one and a half year thereafter.

In this case the interval was 295 days and $4\frac{1}{2}$ hours, so that, allowing the period of gestation to be 273 to 280 days, it is fair to concede conception to have taken place at from fifteen to twenty-two days after delivery.

Neuralgia of the Testicles.—In the *Wiener Medizinische Press*, Dr. Lazarus investigates the condition called “painful testicle,” “neuralgic testicle,” etc., and sets down the following plan of treatment, which he states has been very successful: Sulphate of zinc internally (four grains of the solution of sulphate of zinc in seven ounces of water, a tablespoonful three times daily); and subcutaneous injections behind the scrotum (with the needle-syringe) of a solution of ten grains of sulphate of zinc to two and a half or three drachms of water.—*Lancet*.

Operation for Hernia in a Young Infant.—M. Guéniot related at the Société de Chirurgie the case of an infant, three months old, upon whom he had performed the operation for strangulated hernia. The child died the same evening, and at the autopsy the small intestine was found much distended, and having its convolutions agglutinated by false membranes from peritonitis. The large intestine was collapsed, and a noose of this had penetrated into the inguinal canal, and had become strangulated at both the external and internal orifices. M. Marjolin observed upon the excessive rarity of strangulated hernia prior to the age of thirteen months. He had never met with it in so young an infant as this. M. Panas stated that he had operated for inguinal hernia in a girl six months old, the sac containing, besides the intestine, the right ovary and tube. — *Union Médicale*, November 22, 1873.

Obituary.

JOHN FLOURNOY HENRY, M. D., died in Burlington, Iowa, November 14, 1873, in the eighty-first year of his age. The deceased was born in Scott County, Ky., January 17, 1793; attended a course of lectures at the University of Pennsylvania in 1812; was then made surgeon's mate in Governor Shelby's regiment, and served in that capacity through the War of 1812; in 1817 graduated at the College of Physicians and Surgeons, of New York; practised a short time at Marysville, Ky., whence he removed to Cape Girardeau, Mo., but soon afterward, on the death of his wife, returned to Hopkinsville, Ky., where he practised medicine until called to represent the district in Congress in 1825-'26. In 1828 he married his second wife, who survives him. In 1830 he was elected to the chair of Obstetrics in the Ohio Medical College at Cincinnati. In 1834 he removed to the prairie village of Bloomington, Illinois; and in 1845 again emigrated westward to Burlington, Iowa, where he remained until his death.

WILLIAM C. ROBERTS, M. D., Vice-President of the Academy of Medicine, of New York, died in this city December 9, 1873, in his sixty-fifth year.



Fig. 1.

DR. LUSK'S CASE OF ACARDIA.—See page 177.



Fig. 2.

DR. LUSK'S CASE OF ACARDIA.

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Original Communications.

ART. I.—*On the Logical Proof of the Contagiousness and of the Non-contagiousness of Diseases.*¹ By AUSTIN FLINT, M. D.

I use the phrase "logical proof," in contradistinction, first, from demonstration. The demonstrative proof of the contagiousness of a disease consists exclusively in its communication by inoculation. A disease which, after a sufficient number of experiments or observations, is found to be in this way communicable, is undoubtedly contagious; there is no need for reasoning or discussion, for the fact is demonstrated. The only room for question is, as to the accuracy and sufficiency of the experiments or observations. We have demonstrative proof of the contagiousness of syphilis and gonorrhœa, of small-pox and several of the cutaneous diseases. With regard to some diseases which it is logically certain are contagious, it may be questionable whether this demonstration is complete; examples are measles and chicken-pox. Tuberculous disease affords an illustration of an important condition as regards the demonstration by means of inoculation. It has been proved that this disease is communicated to certain animals by inoculating

¹ Read at a meeting of the Medical Library and Journal Association of New York, December 5, 1873.

them with tuberculous products; but it seems also to be proved that the disease may be produced by inoculating with morbid products other than those which are tuberculous, and hence it may fairly be doubted whether the latter contain a virus or a contagium. Evidently, the demonstrative proof, afforded by inoculation, of the contagiousness of a disease requires that the material by means of which the disease is communicated shall be a morbid product exclusively of that disease; in other words, there must be a specific virus or a contagium in the material. Aside from the proof of contagiousness afforded by inoculation, in the sense as just defined, it is difficult to cite any other proof which is entitled to be called demonstrative. Other proof may be, and is, with respect to certain diseases, convincing and indubitable; but it is logical, not demonstrative.

I use the phrase "logical proof," second, in contradistinction from mere conjecture, hypothesis, or theory. As I expect to show in this paper, there are certain diseases which many consider as contagious without adequate proof. The opinion rests on an unsubstantial basis. The proof is not only not demonstrative, but it has not a logical support. Yellow-fever and epidemic cholera are prominent examples of diseases concerning which opinions differ in respect of their contagiousness, some holding that they are contagious, and others that they are non-contagious. With regard to these two diseases, the history of medicine shows mutability of doctrine, the prevailing belief at some times being that they are contagious, and at other times that they are non-contagious. If it be asked, "Whence this mutability of doctrine?" the answer is, opinions have been based on conjecture, hypothesis, or theory. The influence of authority and conformity to current belief have much to do with the predominance, at any particular time, of opinions on the one side or the other. Within my own professional life, epidemic cholera has been held to be contagious by very few physicians; nearly all holding it be non-contagious. At the present moment the general opinion seems to be the reverse of this: they who regard it as non-contagious being a small minority. With reference to this disease, then, the opinion which now predominates, in itself, should have no

weight whatever in settling the question whether it be contagious or non-contagious. So far from accepting this predominance of opinion as evidence, the independent lover of truth should seek to exclude from the mind all bias derived therefrom. The single point of inquiry is this. Is the contagiousness or the non-contagiousness of the disease sustained by logical proof? and, of course, this is the true point of inquiry as regards any other disease the contagiousness or non-contagiousness of which is an open question.

As a further preliminary consideration, it is to be borne in mind that, in the existing state of etiology and pathology, the logical proof of the contagiousness and of the non-contagiousness of diseases has nothing to do with our knowledge of their special causes, or of the essential nature of the diseases; because, of the special causes and of the essential nature of those diseases concerning which opinions differ as regards communicability, we are really ignorant. In the place of knowledge we have only conjectures, speculations, and theory; and logical proof cannot be based upon these.

We are led by the foregoing considerations to this standpoint: In what consists the logical proof of the contagiousness and of the non-contagiousness of diseases? Let us try to determine in what this proof consists, and, if we can succeed in so doing, we are in a position to decide with respect to any disease—epidemic cholera, for example—whether it be contagious or non-contagious; and to come to a decision, uninfluenced by either authority, current belief, reasoning from insufficient data, or by conjecture, speculation, and theory. Of course, we are to consider in what logical proof consists, irrespective of demonstrative proof. We have not demonstrative proof of the contagiousness of scarlet fever, typhus fever, and whooping-cough, yet the contagiousness of these diseases is sufficiently certain, from the weight of logical proof. The absence of demonstrative proof, therefore, by no means warrants the conclusion that a disease is non-contagious. Wherever demonstration is not available, proof must rest on a logical basis, and I expect to show that logical proof may be brought to bear so as to render the non-contagiousness of certain diseases not less certain than the contagiousness of other diseases.

The logical proof of either contagiousness or non-contagiousness in its application to different diseases must have reference to the different modes in which diseases may be communicable. These different modes are four in number, as follows: 1. By immediate contact, as when syphilis and gonorrhœa are communicated. 2. By impalpable emanations which are diffused, and retain their morbid power within a certain area, called the infecting distance. 3. By fomites. 4. By a virus contained in the excreta, with which water used for drinking and culinary purposes may become polluted, or which, in a dried state, may contaminate the atmosphere at a greater or less distance from the source of the contagious material. This last mode of communicability has of late years excited attention, and there is reason to believe that light has been shed on the diffusion by contagion of one disease (typhoid fever) by recent inquiries in this direction. Allusion may be made in this connection to a late doctrine, advocated by Pettenkofer and others, namely, that the excreta in certain diseases (typhoid fever and epidemic cholera) have not the power of producing these diseases immediately after expulsion from the body, but that this power is acquired by subsequent changes wrought in connection with the soil. This doctrine must be regarded as based on conjecture or theory; but it will be referred to in other connections.

I shall embody the answer to the inquiry, In what consists the logical proof of either the contagiousness or the non-contagiousness of diseases? in a series of propositions:

1. *It is logical proof that a disease is not communicable by either the first or second of the four modes just enumerated, that is, neither by immediate contact nor by impalpable emanations from the body (an infectious miasm), when, on the one hand, of those who are brought into contact or close proximity to patients affected with the disease, a considerable portion do not have it, and when, on the other hand, of those who have the disease, a considerable proportion are known not to have been brought into contact or close proximity to patients affected with it.*

In the application of this proposition, there is a liability to error, if observations are restricted to places in which a disease

is prevalent. Let it be supposed that a disease prevails within a circumscribed area: now, were the disease wholly due to endemic causes, and not therefore contagious, it might happen that the majority of those who have the disease had been either in contact with, or in close proximity to, patients affected with it. The chances might be that, within this area, the greater part of the population had been within the range of an infecting distance. Were such the fact, the predominance of this part of the population, among those who have the disease, would not carry much weight in behalf of contagiousness; whereas, the cases in which there had been no contact or close proximity, although comparatively few in number, would weigh positively and heavily in behalf of non-contagiousness. The etiological problem is to determine, under the circumstances as supposed, whether the prevalence of the disease, on the one hand, be due to extrinsic or endemic causes to which the whole population are likely to be more or less exposed, or, on the other hand, whether the disease be communicated from the sick to the well. In order to solve this problem, it is desirable that observations be made under circumstances which involve an exclusion of local or endemic causes. For this end, observations, in hospitals situated without the limits of the area in which the disease prevails, afford a better opportunity for the application of the proposition before us. Let a certain number of patients affected with a disease be removed to a hospital which is in a situation where no cases of the disease have occurred. The latter supposition excludes an endemic causation. Now, of those who are in close relations to these hospital patients, as physicians, nurses, fellow-patients, medical students, and attendants of any kind, if a considerable number become affected with the disease, this fact is logical proof of contagiousness; if none of these become affected, this is logical proof of the non-contagiousness of the disease. Let either of these results obtain, not in a single instance only, but in a series of instances, or whenever observations are accurately made under the conditions stated, and the question of the contagiousness or non-contagiousness of the disease is settled as positively as it is possible for it to be settled short of demonstration. It is, of course, not necessary that all of those in

contact with, or close proximity to, patients should become affected, for there are various reasons (which I need not here consider) why a contagium is not invariably operative; nor is it essential that every one sustaining to patients the relations named should not become affected; because, assuming the special cause not to be a contagium, they may have received it elsewhere. The number, however, of those who become affected must be few, and there must be circumstances which will rationally account for their having the disease, irrespective of contagion.

Judged by this test, certain diseases are proved indubitably to be contagious. Typhus fever and relapsing fever may be cited as examples. On the other hand, by this test, periodical fevers (intermittent and remittent) are as indubitably proved to be non-contagious. To the latter may be added yellow fever. Without going into details here, facts are available which, in accordance with the proposition before us, render it certain that this disease is not communicable by contact or by emanations from the body.

Can this be said of epidemic cholera? In replying to this question, I recur, naturally, first to my own experience. In 1849, the city of Buffalo, where I then resided, was visited by epidemic cholera, 2,005 cases being reported to the Board of Health during a little over three months, and 858 cases ending fatally. I treated, in the hospital of the Sisters of Charity, 125 cases, the whole number received being 135. This hospital was not entirely in conformity with the requirements for testing fairly the contagiousness or non-contagiousness of the disease, because it was not situated beyond the area within which the disease was prevalent. Now, of the physicians, nurses, attendants, and washer-women, connected with this hospital, not one had the disease. Of patients in the wards with cholera cases, not one had the disease; three cases only were developed in the hospital. In two of these cases there had been no apparent exposure; in the remaining case the patient came in with other members of the family affected with the disease, and was attacked after admission. In the city Cholera Hospital during this epidemic, the wards of which much of the time were greatly overcrowded, there were no deaths among physicians

or any of those employed as nurses or attendants. Two female nurses and one male attendant had the disease, but recovered. The number of cases received in this hospital was 243. I cite these, together with some facts to be referred to in the connections, from an account of this epidemic which I published in the *Medical Journal*, then under my charge.¹

Now, it is to be considered that, at that date (1849), very few regarded epidemic cholera as contagious. Apprehensions on this score did not restrain free intercourse of the well with the sick; there was not the least attempt at disinfection; there was more or less soiling of the bedclothes with the dejections in almost every case.

Is this record of my own experience unique? So far from it being so, it corresponds with the experience in other hospitals at different periods and places. I shall content myself with some citations which I have made elsewhere.² "In the report on cholera, in Paris, in 1831, published by order of the French Government, it is stated that, out of over 55,000 persons affected, and over 18,000 deaths, only 165 were persons whose duties or profession called them to nurse or prescribe for the sick. These 165 cases were from over 2,000 persons employed in the *hospices*, or civil hospitals, either constantly or temporarily. At St. Petersburg, of 58 persons attached to one hospital, two only; and, of 253 persons connected with another hospital, only four were attacked. In the London Hospital, during the epidemic of 1866, of 100 persons employed in the cholera wards, five had the disease; three of these were nurses who slept out of the hospital. Of 11 laundry-women, one had the disease. 'No case occurred in the general wards of the hospital, although during the whole period of the epidemic they contained their full number of cases, most of whom came from cholera localities.' Facts like these could be multiplied to any extent. Contrast with these the facts with respect to the diffusion of typhus in the hospitals."

Let it be borne in mind that in all these instances the hospitals were within the area of the epidemic. This fact affords a rational explanation of the few cases which in some instances

¹ *Buffalo Medical Journal*, No. 102, November, 1849.

² "Principles and Practice of Medicine," fourth edition, p. 422.

occurred among those who were brought into close relations with hospital patients affected with the disease. Physicians, who, during an epidemic, are in constant intercourse with cholera cases in private as well as in hospital practice, assuredly, if the disease were communicable through contact or close proximity, ought not, as a class, to be peculiarly exempt from it. Experience, however, shows that a very small number fall victims to the disease. To recur to my own experience in 1849, the city of Buffalo contained then at least one hundred practising physicians. Among these there occurred not a single death. Contrast this with what would surely be the experience were one hundred practitioners to have the same amount of intercourse during the same length of time with cases of typhus !

As regards, then, the application of our first proposition to epidemic cholera, the special cause of this disease is not generated within the body, unless, according to the fanciful hypothesis entertained by Thiersch, Pettenkofer, and others, that the alvine excreta, after having been expelled from the body, undergo, in connection with the soil, changes by which a virus is produced. Facts to be presented in connection with other propositions will disprove this hypothesis, which may be characterized as marvelous rather than ingenious. I am reliably informed that, in a recent publication, it has been in a great measure abandoned by the most prominent of its advocates, heretofore, namely, Pettenkofer.¹

2. It is logical proof of the non-contagiousness of a disease that, out of a large number of instances in which persons going from situations in which the disease prevails to situations more or less distant in which previously there were no cases of it, and being seized with the disease in the latter situation, no other cases therein occur.

Is it always proof of the contagiousness of a disease that cases do occur within a brief period under the circumstances just stated ? The answer is in the negative ; and the explanation of this answer involves the importation of a disease by human intercourse irrespective of contagion. That a special cause of disease, a morbid agent which is not a contagium,

¹ I am so informed by Dr. Elisha Harris.

may be transported from one place to another in clothing or baggage, must be admitted. A disease is thus portable instead of being contagious. It follows, therefore, that imported cases of certain non-contagious diseases may prove to be the points of departure for their diffusion. How is it to be determined whether the diffusion be thus produced instead of by means of a contagium? I answer, it is reasonable to conclude that the instances in which imported cases of disease are centres, around which other cases occur, are likely to be more numerous if the disease be contagious than if otherwise. When, therefore, observation shows that, as a rule, the prevalence of a disease in particular situations is not traceable to imported cases, instances of the latter being exceptional, it is a fair presumption that the disease is non-contagious. Typhus fever, for example, so often prevails where the first case was imported, that the evidence of its contagiousness from this fact is quite conclusive. It is otherwise with yellow fever. The instances in which an imported case of yellow fever is speedily followed by other cases in a situation previously free from the disease, are so few in comparison with the great number of instances in which no other cases occur, that the exceptions to the rule afford little if any evidence of contagiousness. In the absence of any positive knowledge of the nature and the mode of production of the several causes of non-contagious epidemic diseases, it is logical to attribute the importation of a disease in any instance to portability, and not to contagion, provided there is abundant proof derived from other facts that the disease is not contagious.

Mere coincidence may be the explanation of some striking instances in which an epidemic in a particular situation appears to be traceable to an imported case. During the progress of an epidemic over a considerable territory, it might easily happen that an imported case preceded the breaking out of the disease in several situations without any etiological connection between this case and the subsequent cases.

The liability to error, in drawing conclusions from a single striking instance, may be illustrated by the following occurrence: Many years since, a friend of mine, not a member of the medical profession, conversing with a homœopathic practi-

tioner, was led to ask for an explanation of the doctrine of *similia similibus*. Being told that, according to this doctrine, a remedy which cured a disease would produce that disease in a healthy person, he inquired whether, were he himself to take quinia, under the practitioner's direction, intermittent fever would follow; the reply was in the affirmative. "The proof, then, of the doctrine," said my friend, "seems a very simple affair, and I should be quite willing to have the experiment made upon myself." The proposal was accepted, and he was to begin to take quinia the next day. He was, however, unexpectedly obliged to leave town on that day, to be absent for some time, and the experiment was consequently postponed. It happened that a few days afterward he had an attack of intermittent fever, having never before had this disease. Now, had he entered upon the experiment and taken quinia, the proof of the doctrine *similia similibus* would have seemed to be convincing.

Applying our second proposition to epidemic cholera, undoubtedly its non-contagiousness is not proved by this test. The march of this disease is in some way dependent on human intercourse. Epidemics travel with masses performing pilgrimages, with caravans, with armies, with emigrants; they cross oceans and seas in vessels; they never travel faster than human travelers, and, in traversing a country, they go by the great thoroughfares of traffic and commerce. Either the disease is propagated by means of a contagium, or it is diffused by means of a morbid agent which is portable, and capable of multiplication under favorable "localizing conditions." How is it to be determined which of these explanations is the correct one? This question is to be settled by reference to facts belonging to other propositions. If these facts afford logical proof that epidemic cholera has no contagium, then, of course, the spread of the disease in connection with human intercourse shows only portability, not contagiousness. There is a consideration to be added, namely: it may be that epidemic cholera has a contagium the efficiency of which, under certain circumstances, contributes to the diffusion of the disease, notwithstanding the logical proof of the disease being generally diffused by means of a morbid agent generated without the body.

A few words concerning the application of our second proposition to typhoid fever. The strongest proof of the contagiousness of this disease is afforded by instances in which the evidence of importation is complete, and in which portability, as distinguished from communicability, may rationally be excluded. A most remarkable instance of this kind was the occurrence of an epidemic in a little country settlement in Erie County, New York (North Boston), in 1843; an account of which I published in the *American Journal of Medical Sciences*, in 1845; and a fuller account was contained in my work entitled "Clinical Reports on Continued Fever," which has long been out of print. I have quite recently given an account of this epidemic in a paper on the "Relations of Drinking-Water to the Propagation or Localization of Typhoid Fever and other Diseases," read at a meeting of the Public Health Association of this city.

The infrequency with which this disease is communicated to those who are brought into contact or close proximity to patients affected with it, renders probable the theory that, in instances such as I have just referred to, the contagium to which the epidemic prevalence is due is derived from the dejecta, and gains entrance, into the bodies of those who become affected, by the pollution of water used for drinking and culinary purposes.

3. *It is logical proof of the diffusion of the disease not being due to contagion that the history of epidemics shows outbreaks simultaneously and in quick succession in localities widely separated, and between which there has been no connection by human intercourse.*

To render the proof complete, the following condition is to be added: The possibility of the dissemination of a contagium by means of food or drink must be excluded. It is probable, if not certain, that typhoid fever is sometimes communicated by means of excreta, and especially by drinking-water containing a contagium, and this method of communicability admits of the production of the disease in isolated localities, remote not only from each other, but from the case or cases which furnished the contagium. The idea that cholera is diffused by this method has been entertained. The logical proof, there-

fore, of diffusion independently of contagion, requires that, in a considerable proportion of the instances to which this proposition relates, the circumstances warrant a conclusion that a contagium could not have been communicated in the method now referred to.

In accordance with this proposition, yellow fever is to be declared non-contagious. The early history of epidemics shows that the disease breaks out often at different points, either at once or so quickly as to preclude the possibility of dissemination by means of personal intercourse, and under circumstances which render impossible the transmission of a contagium contained in the excreta of patients affected with the disease.

This is also true of many epidemics. With reference to facts bearing upon the contagiousness or non-contagiousness of this disease, I studied with care the early history of the epidemic at Buffalo, in 1849. The disease had previously existed at various places on the Mississippi and Ohio Rivers, and in Chicago. The first two cases in Buffalo were imported, one occurring on board a steamer from Chicago, the patient being transferred to an hotel, and the other occurring on a steamer from Sandusky, Ohio. The latter case was reported on June 1st. The first indigenous case occurred on June 4th, a mile and a half from the centre of the town; and there was apparently no possible connection (moral or physical) between this case and the two imported cases. The second indigenous case was on the 8th of June, and this case was in a remote part of the town, in an opposite direction to the part where the first indigenous case occurred. On the 9th of June, two cases occurred, the patients being a mother and child, who were on their way westward, from Brooklyn, New York. On the 11th of June there were eight cases; one of these cases was in the street in which a case had already occurred, but the other cases were in widely-separated localities. On the 14th of June, seven cases occurred; five of these cases were in localities widely separated, and in two cases the residences of the patients were not preserved.

The cases subsequently occurring were, in like manner, at different points. The fatal cases during the epidemic, amount-

ing to 858, were distributed in eighty-seven different streets, the whole number of streets in the city being one hundred and eighty-four. The disease prevailed in some streets more than in others, but no area of much extent was entirely exempt. In view of these facts, it seems inconceivable that the diffusion of the disease was due to a contagious principle. The theory which seems most consistent with these facts is that a morbid material of some kind was imported, which, increasing or multiplying, and becoming generally diffused throughout the atmosphere, occasioned outbreaks in situations where favorable localizing conditions existed. If we may imagine that the morbid material was in the form of organic germs, these were disseminated, developing and multiplying in places where they found a congenial nidus.

The history of the cholera epidemic in this city, in 1866, furnishes facts as striking as (if not more so than) those of the epidemic at Buffalo. They may be found in the Annual Report of the Metropolitan Board of Health for 1866. The first nine cases, occurring between May 1st and June 13th, were, with a single exception, at localities so widely separated as to preclude the possibility of intercommunication. Previous to July 8th, there had been twenty-five fatal cases occurring in seventeen different streets, in fifteen different blocks, and in nineteen different houses.

4. *It is logical proof of the continuance of epidemics not being dependent on contagion that their duration is determined by self-limitation.*

A contagious disease being perpetuated by the removal of a virus, or of an infectious miasm in the bodies of those affected with it, its prevalence continues as long as persons who are susceptible are either brought into contact with patients, or come within an infecting distance. The duration of an epidemic diffused by contagion, therefore, depends on the continued exposure of susceptible persons; the epidemic ends, in other words, when the virus or infectious miasm no longer gains entrance into the bodies of those in whom it can exert its morbid power. And, after the recovery of those who are affected, the contagious material is no longer reproduced. But, with respect to some contagious diseases, the special

causes may remain in fomites for an indefinite period, and give rise to the diseases long after their reproduction of the causes in a particular locality has ceased. This is eminently true of small-pox and scarlet fever. Hence, the epidemics of contagious diseases have not a self-limited duration. On the other hand, certain epidemics cease after a time, although there is no lack of persons who, as there is every reason to believe, are susceptible, and who are situated with respect to patients precisely as those who had been already affected. The epidemics, as it were, die out, apparently either because the special cause is no longer produced, or in some way its efficiency is lost. In this sense the epidemics are self-limited. This appears to be true of yellow fever. Yellow-fever epidemics do not continue indefinitely, even when they are not arrested by frost. Of cholera epidemics, self-limitation is a marked feature. Their duration, it is true, varies within considerable limits; but in general, after a few weeks or months, they die out from an intrinsic tendency. This fact is more marked in cholera than in yellow-fever epidemics, because the susceptibility to the former disease is not destroyed in those who have experienced it. It is difficult to reconcile the self-limited duration of cholera epidemics with the doctrine that this disease is in any way communicable.

5. *It is a logical proof against contagiousness that an epidemic shows a progressive increase in the severity of the disease up to a certain maximum of intensity, and then a progressive decrease in the severity until the epidemic ceases.*

This appears to be a law of cholera and yellow-fever epidemics. Now, if these epidemic continuances were due to a morbid product derived from the bodies of those affected (that is, a contagiousness), it would seem that the severity of the disease should at least remain undiminished as long as its epidemic prevalence continued; it might, indeed, be reasonably expected that the severity would increase instead of decreasing after a certain time. Analogical reasoning would lead to this expectation. A certain measure of proof, therefore, against contagiousness proceeds from the application of this proposition.

6. *It is logical proof of an epidemic disease not being con-*

tagious, that the diffusion over a large area takes place with great rapidity, and that the disappearance of the disease is rapid and complete.

The most striking of the applications of this proposition is to influenza. This epidemic, traversing sometimes with great rapidity large portions of the globe, affects in different situations a great multitude of persons simultaneously, and its epidemic prevalence ends as rapidly as it began, having evidently a self-limited term of existence. The late epizootic which affected horses furnished a striking illustration of these points. In a less marked degree the proposition applies to the epidemic prevalence of certain other diseases. The histories of yellow-fever and cholera epidemics often show remarkably a quick diffusion of the disease, and its sudden disappearance, not only the epidemic ceasing, but, after a short period, not a single case occurring. Contrast with these points the prevalence of a disease indubitably contagious, namely, typhus. Its diffusion is comparatively slow, its progress often being distinctly traceable from house to house. Often prevailing for an indefinite period, ceasing to prevail from the want of fresh subjects, it disappears gradually, lingering as long as there are susceptible persons who come within its infecting distance.

7. I shall make this the last of the series of propositions, embracing in it considerations which might be enunciated separately, were it not desirable that the series should not be unduly extended :

It is logical proof of the non-contagiousness of a disease that it prevails exclusively, or, as a rule, at certain seasons of the year ; that its prevalence is restricted within certain geographical boundaries, and that, having, undoubtedly, a special or specific cause, this cause requires for its efficiency auxiliary causes or certain "localizing conditions."

Contagious diseases may prevail at certain seasons more than at other seasons, owing to circumstances which tend to promote the diffusion of contagion. Typhus fever, for example, is apt to prevail more during the winter than during the summer, for the reason just stated. It is possible, as has been supposed, that epidemic influences, wholly irrespective of these circumstances, and entirely distinct from contagion, may con-

tribute to the prevalence of a contagious disease. The histories of small-pox epidemics favor such a supposition. But, a disease which is communicable will prevail more or less at all seasons, provided susceptible persons are exposed to the contagium; in other words, season will not have such a governing or controlling influence as is shown in the histories of yellow-fever and cholera epidemics, more especially the former of these two diseases. These remarks are alike applicable to the restriction of a disease within geographical boundaries. Compare, in this point of view, yellow fever and cholera with typhus, small-pox, and the other eruptive fevers! The third consideration, namely, the requirement of auxiliary causes, or localizing conditions, for the efficiency of the special or specific cause, has hardly less weight than two other considerations. It is, of course, to be admitted that auxiliary causes and localizing conditions may contribute to the diffusion of a contagious disease; but they are not indispensable to its prevalence. A contagium will cause the disease, of which it is a product, irrespective of any other morbid agencies. Indeed, so far as concerns the conditions of health in the subjects of a contagious disease, it is often a matter of observation that the robust and vigorous, rather than feeble persons, are liable to become affected. A contagium does not require accessories to render it efficient, nor is its specific character enhanced by any agencies without the body. Its morbid power is inherent in its properties as a virus; this power may diminish, but probably never augment after the contagium leaves the body in which it was produced. On the other hand, we can readily understand that the specific cause of a disease which is non-contagious may be developed and increase or multiply in consequence of circumstances embraced under the same auxiliary causes, or localizing conditions. Facts warrant this belief. It is owing to the necessity of certain auxiliary causes or localizing conditions, that some diseases—yellow fever and cholera—prevail at certain seasons of the year as a rule, and that their prevalence is restricted within certain territorial limits.

I submit the foregoing propositions as furnishing the rules by which the contagiousness and the non-contagiousness of diseases

are to be decided. If we form an independent opinion, that is, an opinion for ourselves, with respect to the contagiousness or non-contagiousness of a disease, from a few facts or a limited view of the subject, we are exposed to a liability to error. In order to avoid error, we must judge, after bringing to bear on the question the logical proof derived from the various considerations which are embraced in these propositions. Some years since, a medical gentleman who was an able advocate for the contagiousness of epidemic cholera, issued a circular soliciting the contribution of facts supporting this doctrine. I doubt not he collected data in abundance. It is as easy to gather isolated facts tending to show the contagiousness of this disease and of yellow-fever as it is to prove any theological dogma by detached quotations from Scripture. Dr. William Budd has related, with great *naïveté*, his inception of the idea that phthisis is communicable. Meditation upon this idea soon led to a firm conviction. Forthwith he began to look for evidence to sustain his conviction, and he found no difficulty in strengthening his belief that the doctrine rested on a solid foundation of facts!

In writing this paper I have had prominently in mind, as has been apparent, the question as to the contagiousness or non-contagiousness of epidemic cholera. The logical proof of the non-contagiousness of this disease seems to me to be conclusive. Let me recapitulate the points embraced in the propositions which I have submitted, as bearing on the non-contagiousness of this disease :

1. It is not communicable by immediate contact, nor by impalpable emanations from the body, because, of those who are brought into contact with, or close proximity to, patients affected with the disease, a considerable portion do not have it; whereas, of those who have the disease, a considerable proportion are known not to have been brought into contact with, or close proximity to, patients affected with it.

2. Out of a large number of instances in which persons going from situations in which previously there had been cases of it, and being seized with the disease in the latter situations, no cases subsequently therein occur.

3. The history of cholera epidemics shows outbreaks simul-

taneously or in quick succession in different localities widely separated, and between which there had been no communication by human intercourse, and when the transportation of a contagium by means of food or drink was impossible.

4. Cholera epidemics are self-limited as regards duration.

5. Cholera epidemics show a progressive increase, followed by a progressive decrease in the severity of the disease.

6. The epidemic diffusion of the disease over a large area takes place often with great rapidity, and its disappearance is rapid and speedily complete.

7. Cholera epidemics generally occur during the warm seasons of the year; they rarely occur in sparsely-settled, salubrious situations, and the special course seems to require, for its efficacy, auxiliary causes or localized conditions.

Many, if not most of the advocates of the contagiousness of cholera at the present time, suppose that the contagium is contained in the choleraic dejections. Nothing can be more certain than that the disease is not communicated by contact of the surface of the body with the dejections, or by a volatile material which these may give to the atmosphere. My own experience corresponds with that of Dr. Goodeve, as expressed in the following quotation: "It has been my lot to see many cases at a time, and, for a long time in my own wards, to see the beds, *the sheets*, the hands of attendants, the floors frequently—nay, constantly—soiled with discharges; to see the utter impossibility of providing fresh beds, and fresh blankets, etc., for every case; to see abundant opportunities for the diffusion of the poison from the discharges; and yet not to see cholera spread in the wards. If fresh cholera-discharges were so virulent, every bed next to a cholera-bed would be a bed of the disease; every bed and metal bed-pan would be a source of cholera to every succeeding patient. My own observation is, that no such evil results."¹

There is, however, another way in which a contagium may be received into the system, namely, by means of drinking-water. Is not the disease in some instances communicated in this way, admitting that in most instances the diffusion is not by contagion? May not cholera, in this regard, resemble

¹ "Reynolds's System of Medicine," art. Epidemic Cholera.

typhoid fever, which undoubtedly, in the majority of cases, is due to a contagium, but which is, without much room for doubt, sometimes produced by a material contained in the alvine dejections from typhus patients, which is introduced into the body by means of drinking-water? These are facts which appear to support our affirmative answer to these questions.

Drs. Budd, Snow, and Simon, have reported facts which seem to point to the presence of a contagium in drinking-water. I cite the following as one of the most striking of these, reported by Simon: "In the epidemics in London the mortality presented a striking contrast between the consumers of water supplied by two companies, drawing their water from different sources, but distributing it in the same district at the same time and among the same class of people, the pipes of the two companies being laid pretty evenly in the same areas, in many places running side by side in the same streets, and the houses supplied pretty equally distributed. The water companies were the Lambeth Water Company and the Southwark & Vauxhall Company. The first drew their supply above the influence of the London sewerage and tidal flow, the last from the river near Vauxhall and Chelsea. The Lambeth supply was tolerably pure, the Vauxhall Company's very impure. The deaths in the houses supplied by the Lambeth Company were at the rate of 37 to every 10,000 living; in those supplied by the Southwark and Vauxhall, at the rate of 130 to every 10,000 living. The population drinking the foul water appears to have suffered $3\frac{1}{2}$ times as much as that drinking the purer water, the population submitted to the test being 400,000 to 500,000."¹

Here, as in other instances, impure drinking-water is undoubtedly shown to contribute to the diffusion of cholera; but, so far from proving a contagium in the water, the logical proof is the opposite of this, inasmuch as, of the population receiving pure water, 37 to every 10,000 were affected, and died with cholera. An analysis of facts, bearing on the question raised, will probably always show simply that polluted water is to be ranked among the most powerful of the auxiliary causes of

¹ "Reynolds's System of Medicine."

cholera. I am not aware that we have the history of any outbreak which embraces a combination of circumstances affording logical proof that the disease was produced by a contagium in drinking-water. The most to be said of the question is, it is not impossible that what has been proved respecting this mode of communicating typhoid fever may be true of cholera; but the logical proof is yet to be afforded. To consider that, in general, the disease is diffused by means of a contagium in drinking-water, is manifestly absurd.

There remains another question, namely, Do the dejections contain a material which is not at once a virus or a contagium, but becomes such after changes which are effected in the soil under certain telluric conditions? The affirmative answer to this question embodies a doctrine of which Pettenkofer has been the most prominent advocate. Pettenkofer appears to have, with great zeal, devoted much labor in gathering facts in support of the doctrine. He was led to consider the quantity of water in soil as playing an important part among the conditions for evolving the special cause from decomposing dejections; hence, by German writers, the doctrine is termed "Pettenkofer's ground-water theory." The theory has, as I have been informed, been in a great measure abandoned by Pettenkofer, as adequate to explain the diffusion of the disease. I have not time, nor am I prepared, to enter into a discussion of this doctrine. It seems to me, however, that it may be disposed of in a few words. Certainly it cannot be applicable to all outbreaks of cholera. If it be applicable to any, it is only to a certain proportion of instances. Now, epidemic cholera undoubtedly has a special or specific cause which must always be present whenever the disease is produced. It has not entered into the scope of this paper to consider in what consists the special cause, whether it be a chemical product, a living organism, or dead organic matter. Let the cause be either of these, facts show conclusively that, in a large proportion of instances, it is impossible for the cause to have any connection with the dejections as its source. To suppose, therefore, that it has such a connection in a few instances is theoretically not probable, and without logical proof the supposition rests upon a fanciful hypothesis.

In conclusion, let it be borne in mind that, although not contagious, cholera is a portable disease. The special cause, whatever it be, is transported in ships, clothing, merchandise, etc., and, finding local circumstances favorable for its multiplication or increase, it gives rise to cholera epidemics. The special cause is destroyed by disinfectants, and the disease may in this way be "stamped out." This was demonstrated triumphantly in this city of New York in 1866. Successful disinfection by no means proves the contagiousness of a disease. Yellow fever may be in the same way stamped out. The prevention of cholera epidemics involves prompt and efficient disinfection, together with the removal of auxiliary causes. Whenever, in conjunction with these measures, premonitory symptoms are invariably at once arrested by simple medicinal and hygienic treatment, this being secured for all the members of a community by house-to-house visitations, the disease will be found to be preventable and controllable.

ART. II.—*On the Nerve-Centres of Circulation and Uterus.*

By DR. WILLIAM SCHLESINGER. From the Institute for Experimental Pathology in Vienna. With one Table. Translated, by permission of the Author, from advance-sheets of the "*Medizinisches Jahrbuch*," for 1874, by S. H. Chapman, M. D., New Haven, Conn.

DATA, obtained from researches already made, draw attention to the fact that, in studying the phenomena of circulation, we are assisted by the simultaneous observation of uterine contractions:

Not only because the movements of the uterus stand in close relation to the actual condition of the circulation, but because foothold is given for the supposition that the innervation of the circulatory system and of the uterus may depend upon the same laws, and arise from the same points in the central nervous system.

It has been shown, indeed, among other things, that the same excitants which, by direct or reflex action upon the nervous centres of circulation in the brain, increase the blood-

pressure, are able also to set the muscular tissue of the uterus in contraction.

By more recent experiments which I have made, in course of the last year, the similarity of action, under the influence of certain irritants, of the nerve-centres of the uterus and circulation, has been conclusively demonstrated; and we have further proved that the local arrangement of these centres has not been definitely ascertained.

The following paper describes these experiments.

Let me first, however, give a short historical sketch of the means, and the order in which these centres have been hitherto studied.

The first observation in this direction is that, after separation of the spinal cord from the brain, the blood-pressure in the aortic system sinks from its former height to a much lower level.

This fact, simply as such, was first made known by A. Bezold.¹ This author advanced, quite originally, but with great caution, the supposition that it may not be the injury to the vaso-motor nerves, but the lessened motive-power of the heart, which diminishes the pressure of the blood in the aortic system after cutting through the spinal cord.

The explanation which Bezold called "possible" was placed beyond every doubt by the experiments of Ludwig and Thiry.²

Ludwig and Thiry have shown that after galvano-caustic separation of all cardiac branches, electric irritation of the peripheral end of the divided spinal cord still calls out all the phenomena of increased heart-action, just as the excito-motor nerve-system of the heart, discovered by Bezold in the brain, was supposed by him to have done, through the channel of each of the now divided nerves respectively.

They have further shown that the same increase of heart's action as that produced by irritation of the spinal cord takes place also when the thoracic aorta is compressed; and they

¹ Bezold "Untersuchungen über die Innervation des Herzens." Leipzig, 1863, II. Abth.

² Ludwig and Thiry, "Ueber den Einfluss des Halsmarkes auf den Blutstrom." Wiener Akad. Sitzber., xlix. Bd., p. 424.

have finally added that, during irritation of the spinal cord, in proportion as the pressure in the carotid rises, and the heart's action increases, the small arteries contract, even to disappearance.

According to these experiments, it had become probable that the normal tone of the vessels is dependent upon the constant excitation of a vaso-motor centre to be found in the brain; and that, further, the increased resistance in the arteries could be looked upon as a sufficient cause of increased blood-pressure. With this, it is also conceivable that, after elimination of this centre by separation of the medulla oblongata from the spinal cord, the tone of the vessels is lost, and the blood-pressure suddenly sinks from its previous height, by swift escape of the blood which is thrown with every beat into the artery.

Another argument in favor of the existence of the vaso-motor centre in the medulla oblongata is found in the changes which are set up by prolonged interruptions to the entrance of air into the circulation. John Reid¹ had already found that, if one attaches to the crural artery of a dog a hæmodynamometer, the quicksilver in it rises for some time, if the animal is prevented from breathing. J. Reid's explanation is, that it is more difficult for the dark blood, rich in carbonic acid-gas, to pass through the capillaries.

Brown-Séquard,² on the contrary, makes the rising of pressure depend upon the irritant action of the carbonized blood upon the heart.

A similar explanation Traube³ has given to the phenomenon which he witnessed in 1863.

He saw, in curarized animals, in which, after cutting the vagi, injections of carbonic-acid gas were made, the blood-pressure rise, and thought that the gas worked as an excitant to the musculo-motor nerve-system of the heart.

Thiry⁴ first took the view which to-day is authoritative.

¹ "Kritische und experimentelle Untersuchungen des Nerveneinflusses auf die Erweiterung und Verengerung der Blutgefäße." Gust. Roever. Rostock, 1869. Preisschrift, p. 7.

² "Experimental Researches," 1853, p. 119.

³ Traube, *Mediz. Central Zeitung* for December, 1863.

⁴ Thiry, "Ueber das Verhalten der Gefässnerven bei Störungen der Respiration." *Centralblatt*, 1864, No. 46, p. 722.

He saw, on curarized mammals, by interruption of artificial respiration, all the smaller arteries contract, even to disappearance; and believed that he could say, from other unpublished experiments, that the existence of this contraction was due to an irritation of perhaps all the nerves presiding over the circulation, in the central nervous system (medulla oblongata).

In point of fact, Traube¹ was the first to test this demonstration. When he had crushed the cord between the first and second cervical vertebræ, had cut the vagi in two, and suspended the artificial respiration—the animals being narcotized—then the pressure “increased only just perceptibly or not at all.”

In explaining this result, Traube naturally coincided with Thiry, and added his observations to strengthen the statement that cessation of breathing causes irritation of the vaso-motor nerve-centre, situated in the medulla oblongata; and that the increase of arterial blood-pressure arises from contraction of the small arteries, this contraction being due to the irritation of the nerve-centre.

In another way, but with the same idea, Bezold and Gscheidlen² have supported the preceding publications. These experimenters carried on their investigations in such a way as to cut off the circulation entirely from the hearts of curarized animals. Now, when the blood-pressure was measured at the same moment in the arterial and venous systems, it was found that, with the spinal cord uninjured, for the space of one or two minutes after shutting off the heart, the difference between the two pressures was, taking the average of all the trials, *nil*. On the other hand, with the spinal cord cut through, the arterial exceeded the venous pressure by forty-three millimetres. The authors concluded from this that, after separation of the heart, the blood passes out of the arterial into the venous system, not only because of the elasticity

¹Traube, “Ueber periodische Thätigkeitsäusserungen des Vaso-motorischen und Hemmungs-nervencentrums.” *Centralblatt*, 1865, No. 56.

²Bezold and Gscheidlen, “Ueber die Locomotion des Blutes durch die glatten Muskeln der Gefässe. Untersuchungen aus dem physiol. Laborat in Würzburg.” Leipzig, 1867.

of the arterial walls, but by a vital contraction of the muscular tissue of these vessels—in case, namely, the spinal cord is not cut through; and therefore the irritation of the vaso-motor nerve-centre necessary to raise the circulation can still exert its influence on the muscular walls.

While Bezold, as can be seen from his publications cited above, was correcting¹ his originally erroneous conceptions to coincide with those of Ludwig and Thiry, Pokrowsky² made the attempt to return again to the idea of increase of blood-pressure through increased cardiac action brought on by suffocation.

Pokrowsky could see no narrowing of the vessels during cessation of respiration; on the contrary, a widening of them, with a later narrowing combined with accelerated pulse and increased pressure.

He saw, moreover, the vessels empty with complete closure of their canals, accompanied by diminished pressure.

The vessels remained, according to Pokrowsky, also entirely passive. Under the influence of the motor-centres in the heart itself, but especially as a result of the irritation from the heart-centre situated in the spinal cord, the cardiac action, he meant, was at first very much increased, in order later to be again diminished, partly in consequence of the irritation of the vagus.

In opposition to these views of Pokrowsky, not only have the brothers M. and C. Cyon³ placed again beyond all doubt the correctness of the decision of Ludwig and Thiry, by a series of experiments in the laboratory of Prof. Dubois-Raymond, but Adamüch and Kovalevsky⁴ have also found the opposing theory of Pokrowsky wholly ungrounded, since they could observe very clearly a marked contraction of the vessel's muscular tissue during the absence of respiration. Only the

¹ In *Centralblatt*, 1865, pp. 817–833, says Bezold: “Ludwig and Thiry have shown, with a probability bordering on certainty, that the great influence of the brain upon the blood-current and the movements of the heart through the spinal cord, which was discovered by me, must be referred, at least in great measure, to the vaso-motor nerve-system.”

² *Centralblatt*, 1865, p. 801.

³ *Ibid.*, 1866, pp. 80, 81.

⁴ *Ibid.*, 1868, No. 37.

question, whether the irritation which caused this contraction was absolutely of central origin, they could not answer quite like Thiry and Traube.¹

They saw, namely, after division of the spinal cord and cessation of artificial respiration, the blood-pressure rise; and this happened, not later than it occurs when the spinal cord is uninjured, but only two or three minutes after respiration has ceased. They believed, therefore, that, during suffocation, the cause of the increased tone of the vessels was not to be sought alone in the irritation of a vaso-motor centre lying higher up than the atlas, but that peripheral changes set up by the suffocation may be able to act upon the muscular tissue as an irritant.

One sees, therefore, that as regards mammals, with the exception of the sufficiently-examined experiments of Pokrowsky, all other authors coincide in the belief in a vaso-motor centre lying above the atlas.

In the same region has been sought not only the direct but also the reflex centre of the nerves of circulation.

This time it was also Bezold² who noticed the phenomena belonging here, though he referred them to the exciting cardiac nerve-system, considered by him to be in the brain. "If," says Bezold, "with dogs or rabbits in which the vagi have been divided, one irritates, either mechanically or with electricity, a nerve of sensation in connection with the central nervous system, the blood-pressure and frequency of the pulse markedly increase immediately after the irritation. This rising augments with the force of the mechanical or electrical excitation of the sensitive nerves. It only happens when the large brain is connected with the uninjured motor nerve-system of the heart located in the cord."

From this citation it is clear that Bezold referred the reflex increase in pressure, after exciting the sensible nerves, to the heart's action augmented and caused by this irritation; just

¹ Für Frösche hat Goltz ("Virchow's Archiv," Bd. 29) den Beweis angestrengt dass der Tonus der Gefässe auch vom Rückenmarke beeinflusst wird.

² "Untersuchungen über die Innervation des Herzens." Zweite Abtheilung, Kap. 6, *loc. cit.*, p. 275.

as he had previously also the normal tension of the aortic system.

This reflex increase in pressure, after irritation of the sensitive nerves, failed, however, according to Bezold, not only by simple division of the spinal cord, between the occiput and atlas, but also when the medulla oblongata was entirely cut off from the brain only, although not separated from the spinal cord.

There exists, according to Bezold,¹ in the spinal cord of mammals, not only no reflex connection between the sensitive nerves of the extremities and the motor cardiac nerves, but, also not even simple reflex transitions from the sensitive nerves to the exciting nerve-system of the heart, which was located by him in the medulla oblongata. Irritation of sensitive nerves, that every one can see, says Bezold, acts upon the movements of the heart through the sensorium.

Wholly irrespective of the question whether the assistance of the sensorium, including the great lobes of the brain, may be indispensable in conducting the sensitive irritation to the medulla oblongata, the experiments of Ludwig and Thiry had made it already probable that increased blood-pressure, after exciting the sensitive nerves, could be considered only as an effect of this reflex irritation upon the vaso-motor centre in the brain; i. e., causing an increase of resistance to the blood-streams. Asp and Lovén, especially, have given proof of this.

Lovén,² unlike Bezold, left the vagi uninjured in his experiments, and watched, during the irritation of the sensible nerves, the conduct of several small arteries. He showed that, during irritation, the number of heart-beats markedly diminished; the pressure, however, rose very much in height.

When, now, notwithstanding diminished heart-beat, the pressure had risen high, the small but observable arteries had disappeared from view.

It was learned from this that increase in pressure was dependent, not upon augmentation of heart-force, but upon

¹ *Loc. cit.*, p. 275.

² Chr. Lovén, "Ueber die Erweiterung von Arterien in Folge einer Nerven-erregung." *Arbeiten aus der physiolog. Anstalt zu Leipzig*, v. Jahre 1866. Leipzig, 1867.

an increased resistance in the vessels. Lovén made no experiments with dividing the spinal cord; supported by the investigations of Bezold, he believed, however, that the position of the nervous centre upon which depends the transmission of the reflex action is to be sought for, not in the spinal cord, but in the medulla oblongata.

Ditmar¹ believed that he had shown conclusively by numerous experiments that the theory of Bezold, that the sensorium was indispensable for the transmission of the excitation, was an erroneous one.

"When I undertook," says Ditmar, "to repeat these observations, I found immediately, at the first attempt, and to my great astonishment, that, after separating the brain from the medulla oblongata, the severest mechanical or electrical irritation of the ischiadic nerve remained in fact without any influence on the blood-pressure.

"In order to see, however, whether irritation of the spinal cord gave the same negative result, I opened the vertebral canal, when I observed that the dura mater was filled full of blood, which flowed out of the opening; after this, irritation of the ischiadic as well as of the spinal cord was accompanied by the accustomed impression on the blood-pressure. In a second experiment, notwithstanding the completest separation of brain from medulla oblongata, increased pressure appeared very satisfactorily upon irritating the ischiadic, after the vertebral canal was opened."²

From all his experiments, Ditmar came to the conclusion that irritation of a sensitive nerve causes increase of pressure only in the sense of Ludwig and Thiry, i. e., by contraction of the muscular rings of the smallest arteries; and that the

¹C. Ditmar, "Ein neuer Beweis für die Reizbarkeit der centripetalen Fasern des Rückenmarks." *Arbeiten aus d. phys. Inst. zu Leipzig*, 5 Jahrgang, 1870, p. 14 (28.)

²E. Cyon (*Centralblatt*, 1871, p. 407) has found, on the contrary, that, after extirpation of the entire brain, if only the medulla oblongata remain, irritation of a sensitive nerve brings no changes in blood-pressure; whereupon Cyon concludes that the centre presiding over the circulation is located higher up than this. Schiff, Budge, and Afanasiew, also believed that, by irritation of the great lobes, they produced contraction of the arteries.

centripetal excitation is transmissible to the motor nerves only through the medulla oblongata.

Finally, Ph. Owsjannikow¹ has already tried to locate the spot from which the motor nerves receive their tone and their reflex irritation.

As more exact discussion of these studies would carry us too far, enough for us is the fact that Ph. Owsjannikow, after separating the medulla oblongata from the spinal cord, saw not only the blood-pressure continuously and markedly sink, but also that irritation, applied at this moment to the ischiadic as well as to the depressor, exerted no effect on the pressure.

Conditions analogous to those of the vessels, as respects the existence of a motor-centre in the brain, were also found appertaining to the uterus.

First, Oser and I² have shown that by suspension of breathing, by quick extraction of blood, and by cutting off the arterial supply from the brain, general contractions of the uterus are set up; and that, after cutting through the spinal cord between the occiput and atlas, the previously-mentioned procedures are not followed within a certain time by any movements of the uterus.

Later on I discovered the fact³ that irritation of the plexus brachialis as well as of the crural nerve set up intense uterine contraction—when the cord is intact; and, since the same irritation remained ineffective after separation of the medulla oblongata from the spinal cord, it seemed to warrant the conclusion that the reflex centre of the central nervous system must lie higher up than the point of division between the occiput and atlas.

Finally, to strengthen the theory of a nervous centre of the circulation, located in the brain, it was necessary to demonstrate the action of certain alkaloids on the vaso-motor system.

In this direction S. Mayer⁴ has lately shown that strychnine

¹ Ph. Owsjannikow, "Die tonischen und reflectorischen Centren der Gefässnervens." *Arbeiten aus dem physiolog. Institut. zu Leipzig*, 6 Jahrgang, 1871, p. 21.

² *Medizin. Jahrbücher*, 1872, 1 Heft. Oser und Schlesinger.

³ *Ueber Reflexbewegungen des Uterus*, von Dr. Schlesinger. *Medizin. Jahrbücher*, 1873, 1 Heft.

⁴ *Diese Jahrbücher*, 1871.

nine, by contracting the small arteries, distinctly raises the pressure, and that this contraction could find its origin only in the exceptionally intensive irritation of the vaso-motor centre in the brain; for, after division of the spinal cord high up on the neck, elevation of blood-pressure, after the exhibition of strychnine, was either not at all observable, or, only to a slight degree.

So these experiments also spoke in favor of the often-supposed location of these centres.

What right this theory has to belief, in general and with regard to the data just given—in respect to strychnine especially—will be found in the following experiments:

I.

Strychnine sets up in rabbits, not only with intact, but also divided spinal cord, marked elevation of blood-pressure and energetic contractions of the uterus.

The fact that strychnine sets up in general (with undivided cord) a marked elevation of arterial-blood pressure, and the further fact that this pressure-elevation is evidenced, not only by many other phenomena, such as the heart's action, tetanus of the voluntary muscles, etc., but also by contraction of the small arteries, I have found so often confirmed, that I will avoid a new exhibition of this fact, and will turn your attention to the publications of S. Mayer.

The behavior of the uterus, however, with undivided cord and under the influence of strychnine, has until now remained unnoticed.

If one injects a small dose of strychnine¹ into the external jugular vein of a curarized rabbit in which artificial respiration is regularly kept up, and whose abdomen has been carefully opened in order to be able to observe the uterus, one sees in a few minutes how the quiet uterus suddenly grows pale, becomes cylindrical, and exhibits powerful tetanus.

The horns take on the form of a bow, and finally roll themselves together into a ball.

In this condition the uterus remains for from ten to twenty

¹ A one or a half per cent. solution of the acetate or nitrate was used by me, of which only two or three minims were injected.

seconds, and sometimes a minute or more. Then it becomes injected again—indeed, a deeper red than before—and appears relaxed, although still rolled together.

After a few seconds, begin again new partial contractions which affect now one, now the other horn; sometimes parts of both horns; to give place finally to new general contractions of the whole uterus.

This phenomenon is worth mentioning on this account, because I did not observe it with irritative substances used earlier. If one stops the artificial breathing of an animal whose uterus is sensitive to reaction,¹ or irritates the central stump of a spinal nerve, the uterus answers to this irritation, after a given time, with energetic, universal contractions, which, on withdrawing the irritation, soon give place to a more or less complete rest.

I never saw, after such irritation, a return of the contractions, as was frequently the case after injections of strychnine.

If a manometer has been placed in the carotid of the animal, one sees that, after injection of strychnine, increase in blood-pressure is signaled almost at the same moment with tetanic contractions in the uterus.

If the uterus becomes quiet and lax, the pressure also falls off; if a new contraction takes place, pressure increases again, and, when the uterus hardens with more or less partial contractions of its horns, the blood fluctuates above the entrance into the vessel.

These two effects of strychnine do not always happen at the same moment. They are so closely connected, however, that one cannot but believe them to be the expression of a common cause.

If the medulla oblongata² be first separated from the spinal

¹ Siehe die betreffenden Angaben in den früheren Abhandlungen. Diese Jahrbücher, 1871, 1872.

² I have been accustomed to cut the cord between the occiput and atlas at the posterior spinous process, usually without marked bleeding. There was always physiological proof at hand as to whether the separation between medulla and cord was made complete, in that the pressure always sank 20 to 30 millimetres if the operation were exact, and, moreover, neither cessation of respiration nor irritation of a sensitive nerve produced its known results. It is readily believed that this most important part of the experiment was not left in doubt.

cord, and then strychnine injected, the uterus, until that moment lying quiet, is affected in a few seconds by similar and equally severe contractions as was the case with the cord undivided; and the manometer at the same moment signals a rapid rise in pressure.

The curve No. 1, in the table, gives the picture of such a pressure-elevation in a curarized animal into whose jugular 0.0001 strychnine had been injected.

In the following table can be seen the pressure obtained by injecting strychnine into rabbits, after section of the cord :

EXPERIMENT.	Pressure five Minutes after cutting the Cord.	Maximum Height of Pressure after Injection of Strychnine.
No. 11.....	28	110
" 12.....	15	80
" 13.....	12	70
" 14.....	30	140
" 15.....	18	120
" 16.....	25	145
" 17.....	34	170
" 18.....	28	140
" 19.....	18	150
" 20.....	20	100
" 21.....	20	50
" 22.....	28	165
" 23.....	20	65
" 24.....	15	105
" 25.....	25	140
" 26.....	20	140
" 27.....	15	150

A numerical similarity between increase of pressure with intact cord, and that with divided cord, under a given irritation, we do not consider permissible, not only because this increase varies with the individuality of each animal, but because, *cæteris paribus*, with animals whose cords have been cut and whose vessels are relaxed, there are many more chances of a higher elevation of pressure than with those whose cords are undivided, for in the latter case the arteries are already in a certain normal condition of contraction. All my experiments have shown, however, that elevation of pressure after the exhibition of strychnine, when the cord is cut, exceeds that with undivided cord.

The above data refer to rabbits, without exception, because I turned my attention at the same time to the changes taking place in the uterus.

The experiments which I made on six dogs gave mostly negative results.

While among fifty rabbits which were sacrificed for this purpose I found only three upon which strychnine, with divided cord, had no effect, it was not less than four times the case with the six dogs.

In a favorable case of the former, the pressure rose, with divided cord and after injection of strychnine, from 58 millimetres to 130 millimetres, and of the latter from 30 millimetres to 110 millimetres.

In consideration that Mayer's experiments on dogs gave negative results, I have followed up no further experiments with this animal, and have kept to the rabbits. The fact that strychnine, after elimination of the vaso-motor centre in the brain and the centre of uterine movements, is able to cause not only the latter, but also a marked elevation of pressure, was nevertheless undoubtedly proved by these experiments; and there remains only the question, in what way and through what channels this effect is produced.

The possibility that the pressure elevation may take place, not through contraction of the small arteries, but through other conditions, has been already excluded by reference to Mayer's explanations.

There remains, therefore, only the alternative: either strychnine produces its effects peripherically, i. e., directly upon the vessels and uterus, or there are still other motor centres in the spinal cord beneath the point of division which, after separation from the brain, show activity only upon the exhibition of strychnine.

II.

Dyspnoic arterial blood, after division of the spinal cord and poisoning by strychnine, sets up phenomena which are not observed without strychnine.

If the supposition be correct that, beneath the point of division on the cord, other centres are to be found which are

set into activity by strychnine, then it is probable that under these circumstances they may be affected by other excitants.

Supported by this argument, I next used suspension of respiration on strychninized animals, whose cords were divided.¹

The experiments were carried on in this way: After cutting the cord, I stopped the breathing; a curve was traced; then, after respiration was again begun, strychnine was injected, and after that the breathing stopped again.

¹ The premises evolved up to this point, it is well known, are not fully agreed to. With exception of Adamück and Kovalevsky, who saw marked elevations of pressure after cessation of artificial respiration, although very late after, i. e., two to two and a half minutes, other authors are divided, some having found only negative results; others agreeing with Traube, who found that, under such conditions, "the pressure rose but slightly, or not at all."

Hering ("Ueber den Einfluss der Athmung auf den Kreislauf, Erste Mittheilung; Ueber Athembewegungen des Gefässsystems," Wiener Academie-Sitzungsbericht, II. Abtheilung, December Heft, 1869) has observed the phenomena of Adamück and Kovalevsky, the cause of which he promises to give in a later publication.

Our own actual experiments, in this direction, gave the following:

If one cuts through the spinal cord of a curarized Guinea-pig, and measures the pressure in the carotid, one finds it immediately, or after the vibrations have ceased, not more than 25 or 30 mm.

If one now waits until the pressure continues at a uniform height, and then stops the respiration, there are set up either no changes or a gradual sinking until the animal is dead.

Often, however, we have observed the following: At the moment when the breathing was suspended, or at least within the first few seconds, the column of quicksilver rose from 2 to 10 mm. in height. After several seconds more it sank again, even below the entrance to the vessel, either to remain here constant, or again, in 20 or 30 seconds, to rise higher than before. If the suspension of breathing was continued for a minute or more, the pressure often rose with slow impulses to a higher level than before—30 to 40 mm., and more—this marked elevation failed entirely in the second minute, and the pressure completely sank. After that the pressure had risen some millimetres, if the breathing were again set up, the column of mercury sank immediately, to suddenly rise again 30 to 40 mm. This sudden elevation has only the duration of a few seconds, if the respiration be regularly continued. The pressure returns to its former low position, which it usually takes when the cord is divided.

EXPERIMENT No. 37.—Large rabbit; tracheotomized; curarized; spinal cord between occiput and atlas divided; also the two vagi and sympathetic; canula fastened into the right carotid; blood-pressure, 30 mm.

Stoppage of breathing. In the 14th second, pressure rises to 38 mm.; remains at this point, with slight vacillation, to the 40th second, when breathing is again set up. We wait 5 minutes, during which time pressure gradually sinks to 20 mm.; then inject 0.4 cc. of a one per cent. solution of strychnine into the left jugular.

Twenty seconds after injection, pressure 18 mm. Forty seconds after injection, pressure rapidly rises to 145 mm. At this height, pressure remains 40 seconds, then begins gradually and with many vacillations to decline, and in such a manner that it sinks first to between 100 and 120 mm., then 90 and 100, then between 70 and 90, and so on. In the 8th minute, pressure still fluctuates between 60 and 80 mm.

Thirteen minutes after injection, pressure settles quietly at 50 mm. Now, breathing is stopped. Pressure rises in the 23d second to 150 mm.

After recurrence of respiration, pressure declines rapidly to its starting point. Five minutes later, pressure is 35 mm.; again respiration stopped, pressure goes from 35 to 65 mm. In the 15th second to 45 mm., and, later, to 40 mm. In the 30th second, respiration is again set up. After another five minutes, during which the pressure remains at 30 to 35 mm., the animal begins vigorously and continuously to twitch. Pressure rises spontaneously for some minutes to 90, to return again to its former level, 30 mm. Then stoppage of respiration; notwithstanding that the animal continues to twitch, pressure remains unchanged. The animal is allowed to die.

EXPERIMENT No. 38.—Medium-sized rabbit; tracheotomized; curarized. Division of the spinal cord between occiput and atlas. Also of the vagi and sympathetic. Insertion of canula into the right carotid. Pressure 35 mm. Stoppage of breathing. At the 8th second, pressure is 39 mm.; at the 23d second, pressure sinks again to 30 mm. At the 40th second respiration is begun, whereupon pressure sinks to 26, and, after 70 seconds of constant respiration, pressure has reached its previous stand, 35 mm.

After 1 hour and 20 minutes, injection of strychnine. Pressure rises, in the 18th second, to 170 mm. After 5 minutes, following many vacillations, pressure reached 110 mm.

Now, stoppage of breathing; pressure rises from 110 to 120. After 40 seconds, respiration again begun. Four minutes after, pressure constant at 55 mm. Now, once more breathing is stopped; pressure rises, after 33 seconds, from 55 to 150 mm. After recurrence of respiration, pressure returns to its starting-point. Two hours fifty minutes, again respiration stopped; during 40 seconds no effect. Two hours fifty-two minutes, respiration suspended, to allow the animal to die. Pressure rises from 20 to 60 mm.

The previous cases disclose a peculiarity of the circulatory system quite different from those related in former accounts.

We see that, contrary to expectation, with animals poisoned by strychnine, the blood-pressure rises very perceptibly

after suspension of respiration and the spinal cord has been cut.

This result is widely different from the discovery of Adamück and Kovalevsky, namely, of the peripheral irritation of vessel-walls; for the very considerable increase of pressure followed in some of our cases very quickly, in fact, at the same time at which it appeared after stoppage of breathing with cord undivided.

Against the theory that one has to do with certain centres in the spinal cord, there arose, however, a very important objection.

Adamück and Kovalevsky, in opposition to a similar explanation of the pressure—observed by them, however, as a tardy effect of irritation—made it apparent that there is also elevation of pressure after division of the splanchnic nerves; from which they argued that dyspnoic blood acts directly on the vessel-walls, causing their contraction.

It was, therefore, supposable that by strychnine conditions may be set up in peripherally irritative portions of the organism, and therefore in the vessels, by which their irritability may be increased under the influence of dyspnoic blood.

We have seen, indeed, that the uterus reacts much more quickly under the irritation which dyspnoic blood produces—for instance, compression of the aorta—if the spinal cord be divided. Beyond this fact, comes still into consideration, that the pressure is not always a noticeable one, and that it often entirely fails.

Out of twenty-five experiments on this point ten were negative.

In two cases I noticed a pressure of more than 100 millimetres, after respiration was suspended, in the others, 60 to 30 millimetres. In such animals as showed no pressure-elevation, there appeared another important phenomenon. I thought it enough, at first, to read the pressure.

Pressure rises to an absolute height, and the kymograph, therefore, appeared unnecessary.

Remembering the explanation given by Hering, however, of the “respiratory oscillations of Traube,” I determined to study the details of the curve.

If there lie below the axis other vessel-centres, then it was supposable that these would still be rhythmically excited.

Curves No. 2 and 3 give pictures of the course of pressure, under suspended breathing, with divided cord and strychnia.

If one compares this curve with another which was obtained, *cæteris paribus*, without strychnia-poisoning, the distinction is unmistakable.

While in the former case the slightly-wavy line is drawn nearly straight, in the latter it makes quite regular and marked excursions.

I used, moreover, no special means to make the curve more distinct; simply stoppage of respiration and the tracing with the kymograph.

Now, it speaks very clearly in favor of that which we wish to deduce from the drawing.

It is sufficient for us to know that the strychnia-curve shows, in general, regular wavy lines.

What ought this tracing to teach us? Hering¹ has made it to some degree probable that the respiratory curve is an incidental expression of the rhythmical innervation of the respiratory centre.

Now, at all events, the respiratory centre is disjoined.

The questionable theories of most recent date, as to the location of this centre, do not necessarily come here into notice.

In the first place, Hering's experiments do not prove, with the necessary exactness, that the rhythm of innervation lies singly and alone in the medulla oblongata.

Since he allowed the coinciding of the curve-oscillations with muscular twitchings, to be denoted through an extremity, the experiment did not argue against a rhythm of innervation for the spinal cord itself. In addition to this, in our case the rhythm is present; whether it be the respiratory rhythm or not, we do not inquire.

It remains only to decide whether the cause is to be sought in the centre or at the periphery.

For reasons which I will give at another place, I cannot allow myself to concede that an argument for the central cause of the phenomena can be drawn from the curve-drawings al-

¹ Wiener Sitzungsberichte, Bd. lx.

ready obtained. In respect to it I would like, however, to say, provisionally, that such a cause may now already be considered possible ; for it is hardly probable that the small arteries, spread over a large periphery, could work together so harmoniously, without central nervous connection, as to be followed by regular and universal contraction.

So that we have, after stopping the breathing, two kinds of phenomena to register, both of which speak in favor of other circulatory centres in the spinal cord.

The following circumstance is also worth remarking :

I have at my disposal only five cases of kymographic drawings. With three animals, cessation of respiration gave rhythmical vibrations without absolutely observed elevation ; with one animal an elevation to near 60 millimetres, without vibrations ; with one animal, however, there was slight elevation of pressure, and in the beginning, at the same moment, three plainly-visible undulatory curves.

The theory that other nerve-centres of circulation are located in the spinal cord, below the atlas, would be completely established, if it were possible to produce their action through a reflex channel.

I have seen no elevation of pressure, corresponding to the discoveries of other authors, in animals whose spinal cords have been divided, as a result of irritation of spinal nerves ; but strychnia-irritation was able to transform the state of affairs.

III.

Rabbits, with divided spinal cord, after injection of small doses of strychnia, at times show still a noticeable elevation of pressure, through a reflex channel.

If one remembers that the effect upon the pressure of irritating the spinal nerves, after the cord has been divided, is absolutely *nil*, every increase of pressure which follows such excitation in strychninized animals must awaken special interest.

Now, my experiments, after irritation of the median, after dividing the cord, and injecting strychnia, gave elevations to 120 millimetres.

These facts allow no other explanation, apparently, than that here central action must come into play.

Some phenomena, which were disturbing elements in the course of our experimenting, must also here be described.

After the injection, the pressure at first rose rapidly, then gradually fell; returned, however, either not at all, or only after a long time, to its starting-point.

The undulations, which continued after ten minutes or more, were, as a rule, in a certain sense typical, as is evident from the case already related. Only it also happened that the pressure, when it had approached the starting-point, rose again suddenly and markedly.

One could therefore object that the pressure-elevations during the sensitive irritation might possibly chance to be identical with the previously-mentioned sudden undulations. Such an objection appeared the more plausible, when one considered that the result of irritation under the above conditions was by no means a completely trustworthy one.

Out of thirty-one experiments made in regard to this question, were thirteen absolutely negative: in connection with which fact is also to be noted that, in such negative cases, a second dose of strychnine, as a rule, remained without effect.

To this I can only oppose that the kymographic drawings and manometric indications produced such a coincidence in irritation on the one hand, and pressure-elevations on the other, as to make very probable the existence of a causal connection between them. I give here some cases in illustration:

EXPERIMENT No. 50.—Large rabbit; tracheotomized; curarized. Division of spinal cord between occiput and atlas, also of the vagi and sympathetici. Canula bound into the right carotid. Dissection of the median nerve. Pressure 25 mm. Electric nerve irritation, continuing 30 seconds. Pressure remains the same; has in fact declined 1 to 2 mm.

Stoppage of respiration, continuing 50 seconds. Immediately pressure rises from 20 to 24 mm.; in the 25th second again retires to 20, and remains at this point.

After respiration is begun, immediately pressure sinks 2 mm., and remains constant at 20 to 22 mm.

Injection of strychnine, 0.2 cc. of a one per cent. solution.

Pressure remains for the moment unchanged. In the 34th second after injection, pressure rises from 18 to 140 mm.; remains only a few seconds at this level, however, and sinks gradually. Two minutes after injection, pressure vacillates between 50 and 60 mm., then rises suddenly again to 140; afterward gradually sinks again; after three minutes more it gradually vacillates between 30 and 40 mm.

The abdominal walls are now opened, in order to bring the uterus into view. During this process pressure rises from 30 to 150 mm.; because of this, the operation is suspended, whereupon pressure rapidly sinks again to 30 mm.

Electric irritation of the median. Two seconds after application of the electrodes, pressure rises from 28 to 130 mm.; remains at this point during the continuance of the irritation, viz., 8 seconds, and declines again upon its withdrawal. In a few seconds, pressure stands again at 35 mm.

The operation in the abdomen is now completed; in the same moment pressure rises again to 125 mm.

After three minutes, electric irritation of the median. At the 2d second, pressure, standing at 30 mm., begins to rise, and is 100 mm. at the 5th second. At the same time occur general contractions of the uterus.

After cessation of irritation, pressure returns to its starting-point. Uterus again lax. Cessation of respiration for 60 seconds produces no effect.

Electric irritation of the nerve. Pressure goes from 18 to 80 mm.; at same time general uterine contractions. Irritation continued 20 seconds; in the 15th second, pressure begins to sink a little. Injection of a second dose of strychnia. Pressure for the moment remains at 15 mm. First after 57 seconds, pressure rises from 15 to 60 mm., at the same time general uterine contractions; after one minute, pressure has again reached its starting-point. Cessation of irritation for 50 seconds. Pressure rises in the 20th second from 20 to 40 mm. Falls again, however, even during the cessation, and is, after respiration is repeated, again 15 mm.

Electric irritation has now no effect. Section shows the cord completely divided. The animal has not once twitched during the entire experiment.

This experiment is the only one which gave me such brilliant and convincing results, which I am obliged expressly to qualify, in consideration of the many negative and doubtful results.

EXPERIMENT No. 51.—Medium-sized dog; tracheotomized; curarized. Division of the spinal cord between occiput and atlas. Considerable bleeding. Division of the vagi and sympathetici. Fastening of a canula in the left carotid. Dissection of the right median. Pressure 75 mm.

Electric excitation of the median nerve. Pressure sinks at first about 10 mm., to rise, later on, some millimetres above the starting-point. Continuance of excitation 30 seconds. Stoppage of breathing. Pressure rises immediately from 75 to 82 mm., remains here 20 seconds, and sinks again somewhat below the starting-point.

After 50 seconds, respiration again set up. Pressure 72 to 73 mm.

Injection of strychnia, 0.4 cc. of a one per cent. solution, into the right jugular. Pressure sinks from 72 to 62 mm.; after 2 minutes rises above

the starting-point; and after another minute rises suddenly from 72 to 110 mm. Now pressure vacillates for 2 minutes together, and finally remains constant for a longer time at 90 mm.

Electric irritation. Pressure rises in consequence from 85 to 130 mm. With the cessation of the irritation pressure returns to 85 mm.; 4 minutes later, pressure 80 mm.

Electric irritation of the median. Pressure rises from 80 to 120 mm.; and remains here during the continuance of the current, which was 40 seconds. After its cessation, pressure again falls. In the next 6 to 8 minutes, the median is irritated twice. Pressure each time rises some 30 to 35 mm., i. e., from 70 to 100, and from 58 to 93 mm.; but again sinks after stoppage of the current.

Cessation of respiration during 70 seconds has no effect. Pressure 58 mm. Excitation of the median. Pressure first goes down 5 mm., then rises in the 20th second to 68 mm.; after cessation of irritation, pressure goes back to 58 mm.

A second injection of strychnia is now made. Pressure rises in the 2d minute from 58 to 130 mm. After 2 minutes, since the pressure is again 60, the median is electrified. Pressure rises from 60 to 80 mm. After another 2 minutes, the breathing is stopped. Pressure, within 50 seconds, rises from 62 to 85 mm.

The animal being now killed, the cord is found completely divided.

EXPERIMENT No. 57.—Rabbit; tracheotomized; curarized; cord, vagi, and sympathetic divided. Pressure 30 mm.

Cessation of respiration; pressure rises in the 8th second to 38 mm.; in the 30th second is again 30 mm.; and rises in the 60th second to 40 mm.; at the 70th second again sinks, whereupon respiration is again commenced. Two minutes later pressure is 22 mm.

Excitation of the median for 35 seconds has absolutely no effect.

Injection of strychnia, 0.4 cc. of Mayer's stronger solution. In the 35th second, pressure rises from 20 to 120 mm.; after 3 minutes is again 30 mm. Irritation of the median. Pressure rises almost instantaneously to 90 mm.; remains throughout the irritation between 80 and 90 mm., i. e., for 30 seconds; and, after its cessation, returns after a few seconds to 30 to 32 mm.

Irritation of the median twice more in the next 4 to 5 minutes has absolutely no effect. A second dose of strychnia has also no effect. Pressure goes up at most only 6 to 8 mm.; after this, however, irritation of the median gives a pressure-elevation of 6 mm.

It would be useless to continue further here the description of the cases, so convincing are some of them, so striking the data of others; according to which, nerve-irritation in the one case has complete effect, in another, no effect whatever.

Therefore, this series of experiments cannot be depended on for a definite solution of the question whether there are to be found below the atlas other nerve-centres of circulation.

I have already shown that the nerve-centres of the uterus and circulation exhibit great sympathy in their functional phenomena; and I will now show that an examination of the uterus leads us to a result, where the kymograph leaves us in the lurch.

In a former publication I have described how the uterus acts under reflex influence, like the muscular threads in the small arteries.

For application of the irritant, I used generally the brachial plexus. Many reasons decided me to do this.

The crural is useless, because one comes too near the uterus with the electrodes to safely exclude the influence of the circulation.

The ischiadic is unhandy, because an exact observation of the uterus requires that the animal lie on its back.

Finally, the result of irritation to the brachial plexus is one so prompt as to suffice for the completion of the experiment which I had attempted. Secondly, I have shown that, with division of the cord at the atlas, the uterus no longer reacts under sensitive irritation; in fact, the same uterus which, before division of the cord, suffered tetanic contractions upon irritating the brachial plexus, after this division and under the same irritation remains completely at rest. The case is different after exhibition of strychnia.

IV.

While the uterus remains quiet after irritation of the median nerve when the cord is divided, it is affected by the severest general contractions under the same irritation after injection of strychnia.

Even if the uterus does not always become completely lax after strychnine-injection, yet the result of irritation is so marked that the acceptance of a causal connection appears to be much more just than with respect to the vessels.

In other words, the examination of the uterus makes it more probable than the kymographic examination does, that

certain nerve-centres, which were not observable by our former method of experimentation before the exhibition of strychnine, are brought into view by this poison.

It can always, however, be objected that even the effect on the uterus is not always regular; that the local arrangement of the uterine nerve-centres is perhaps much more extended than I have shown to be the case in former experiments; that this proves nothing for the actual position of these centres; and, finally, it may be maintained that, if, as my experiments have made probable, these centres do stretch out somewhat beyond the atlas, they are perhaps simply isolated ganglia, which, during life, can scarcely come under consideration.

I must myself acknowledge that, after the cord is divided and before strychnia is injected, the effects of the spinal cord upon the muscular tissues of the vessels and uteri are really *nil*; and yet this consideration is not satisfactory.

The following will make this question clear:

V.

With undivided cord, the irritation of the electrical current applied to the brachial plexus, crural nerve, and ischiadic, produces in a similar manner in either case tetanic uterine contractions. With divided cord, the effect through the brachialis is completely extinguished; that through the crural nearly so; that through the ischiadic is sometimes one-sided, sometimes completely absent.

EXPERIMENT No. 60.—Rabbit; tracheotomized; curarized. Abdomen opened. Uterus well developed, bright-red in color. Division of the vagi and sympathetic. Cessation of respiration. On the 14th second, general energetic uterine contractions. After recommencing the breathing, uterus becomes quiet.

Irritation of the median nerves, right and left; also of both ischiadics in the course of the next few minutes, produces—after from 5 to 12 seconds—general contractions. Spinal cord is now cut between occiput and atlas.

Irritation of the right median for 25 seconds has no effect on the uterus. The latter remains lax.

Irritation of the left median, also no effect.

Irritation of the left crural for 25 seconds; only traces of partial contractions observable.

Irritation of the right ischiadic, as also of the left, for 13 to 15 seconds, produces general uterine contractions.

Injection of strychnine into the jugular. After 8 seconds, general tetanic contraction. After the uterus has been for some time quiet—i. e., 6 minutes—irritation of the right median; after a few seconds, general uterine contractions. This is repeated twice, with the same result.

Irritation of the left median; after a few seconds, general uterine contraction.

Irritation of the ischiadic has the same effect.

EXPERIMENT 61.—Rabbit; tracheotomized; curarized. Vagi, sympathetici, also spinal cord, divided. Abdomen opened. Uterus bright-red color.

Irritation of right ischiadic; at the 4th second, general energetic contraction of the right uterine horn; during which the left remains quiet. Three times repeated, with the same result.

Irritation of the left ischiadic; at the 5th second, tetanic contraction of the left horn, during which the right remains inactive. Three times repeated, with the same result.

Irritation of the right median; for 25 seconds, absolutely no effect; uterus remains inactive. Twice repeated, with the same negative result.

Irritation of the right ischiadic with a drop of sulphuric acid; during the succeeding seconds general contractions of both horns. Irritation of the left ischiadic with the acid has the same effect.

Injection of strychnine—one-quarter syringe of a one per cent. solution. After a few seconds, general uterine contractions, which continue two minutes. Afterward the uterus is lax and regains its color.

Irritation of the right median. Contraction of the right horn. Since this nerve has for a long time remained exposed to the air, the left is dissected out and irritated; at the 10th second begin general energetic contractions. Afterward irritation of the left median has no effect.

Pause of 5 minutes; then irritation of the right ischiadic; general energetic contraction of both horns.

Irritation of the left media. General uterine contraction.

Irritation of the right media has no effect.

Irritation of the left media also now has no effect.

Irritation of the right ischiadic, on the other hand, still sets up contractions, but only on right side.

After these experiments, one thing is very clear.

When irritation of the median, under the usual condition of divided cord, causes no uterine contractions, it happens, not because no centres for uterine nerves lie in the spinal cord, for proof of their presence is furnished by irritation of the ischiadic. Furthermore, the cause cannot lie in this, viz., that between the median and nerve-centres in the spinal cord exist

only such delicate bonds as are cut in the division of the cord, since, after the exhibition of strychnine, reflex action is again obtained through the median.

If, therefore, centres do exist, and the brachial plexus does not affect the uterus, it shows all the more conclusively that—

A portion of the reflex apparatus, lying in the spinal cord, is rendered inactive, as far as our perception goes, by the separation of the brain from the spinal cord.

Upon the truth of this proposition depends a great deal.

If, by division of the spinal cord, the activity of the centres lying in the cord is so far paralyzed that we can no longer recognize its presence, then all that which was deduced from cases where the cord was divided, about the topography of nerve-centres in the cord, is insufficient evidence.

If we now review the facts which have been collected in the course of this essay, there remains to us for the uterine nerves only the one specified explanation.

If these centres lie above the point of division, it could not be explained how reflex action can still be conducted through the ischiadic.

The uterine nerve-centres, therefore, stretch down below the atlas.

If those centres which lie below the atlas have no connection with the centres of the brachial plexus, it could not be understood how, with divided cord and the action of strychnine, reflex action can still be obtained through the same nerve.

The uterine nerve-centres, below the atlas, therefore, stand in reflex connection with the centres of the brachial plexus.

If, however, the centres be there, the connections exist, and with divided cord (without the use of strychnine) no reflex action be obtained, the power of the mechanism, so far as we can see, has been destroyed.

If this, however, be used as evidence of the existence of a reflex apparatus in the spinal cord, it is also possible evidence of the existence of other centres.

Independent of the knowledge obtained about vessel-contractions—i. e., elevations in blood-pressure—my experiments also upon the uterus lead me to such a conclusion as to allow me to say :

The statement that the circulatory nerve-centres stretch beyond the atlas is not proved ; the proofs obtained from the phenomena after the division of the cord are insufficient.

Let us consider now, however—

1. That strychnine, after the spinal cord is cut, produces, very rapidly, a marked elevation of the blood-pressure.

2. That strychninized animals, after respiration is stopped, show, in the majority of cases, either marked increase in pressure, or rhythmic vibrations in the kymographic drawings.

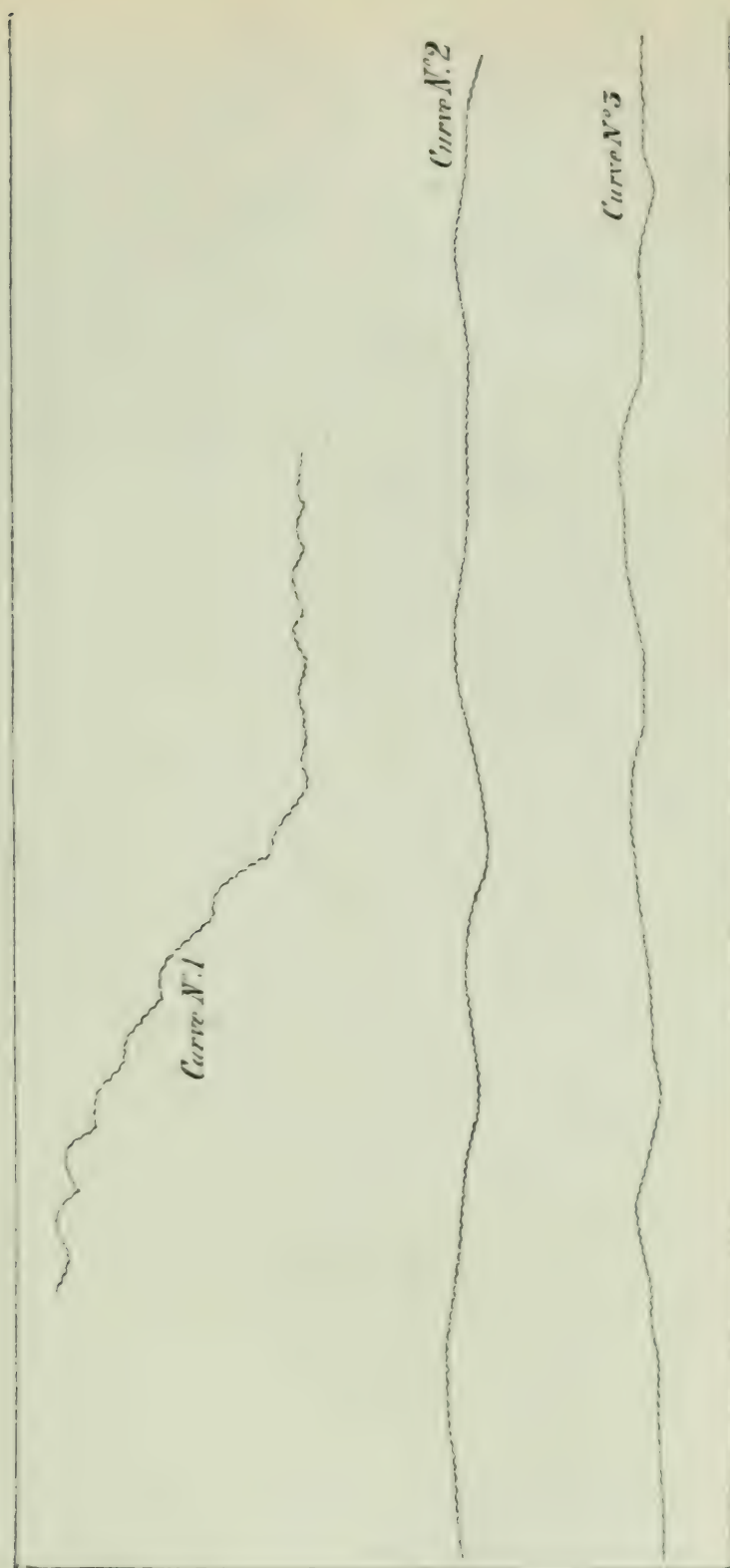
3. That the same animals, at times, show a pressure-elevation accompanying irritation of the spinal nerves.

4. The muscular tissue of the circulatory system offers so many analogies with the muscular tissue of the uterus, as respects their nerve-centres, that—

5. The uterine nerve-centres, without doubt, stretch down below the atlas.

If we consider the foregoing, there arises in our minds a strong probability for the statement that the nerve-centres of circulation also extend down below the atlas into the spinal cord ; that the function of this centre is lost to our observation ; and its effect upon the tone of the vessels is paralyzed so soon as the oblongata, i. e., the brain, is separated from the spinal cord ; that, lastly, strychnine is able to awake this function momentarily.

Whether the centres which are located in the spinal cord, below the atlas, actually influence the vessels during normal life, remains an open question. The circumstance that these centres do not observably act after the cord is cut, and without the exhibition of strychnine, can hardly come under consideration, for we do not know, indeed, what energetic changes are caused by destruction of the connection between brain and spinal cord.



ART. III.—*The Rite of Circumcision ; why is it sometimes followed by Disease and considered dangerous ?* By L. H. COHEN, M. D., Quincy, Ill.

I DESIRE to offer a few remarks called forth by the article on "Transmission of Syphilitic Contagion in Circumcision," by Dr. R. W. Taylor, published on page 561 of the December number of the JOURNAL. I am impelled to this especially by the closing words of the article, hinting at the liability of a rite, which is undoubtedly of importance in a sanitary point of view, falling into disrepute among those upon whom it is obligatory as a religious observance. Dr. Taylor's article, while written in the interests of science, would be apt to prove a mischievous, perhaps a dangerous tool in the hands of some pretended Jewish reformers who would fain abolish the practice ; and in this connection I may refer to an article on the subject, published in your pages, in vol. xiv., 1871, by my friend Dr. M. J. Moses, of New York.

It is not my present object to enter into any discussion as to the transmissibility of syphilis in the rite of circumcision ; but, although Dr. Taylor has by no means proved that this disease was communicated, through the performance of this ceremony, to any of the four cases reported by him, there is very little doubt in my mind that disease (whether syphilitic or not is another question) can be and frequently is the result of the operation as practised by some men of not over-cleanly habits. The greatest importance has been attached by Dr. Taylor to the practice of sucking the wound, and its possible dangers. I am happy to say that in the West this disgusting part of the ceremony is almost always omitted. I have often performed the ceremony myself, and seen it performed by others—not medical men, and I only remember one instance in which the *mohel* (or circumciser) took the glans in his mouth, or spurted the styptic therefrom upon the wound. Regarding styptics, indeed, especially such as port wine, tannin, perchloride of iron, etc., which are used very frequently in a recklessly liberal manner, I believe them to be, as a rule, unnecessary, and very hurtful. The hæmorrhage is usually very slight, provided the frænum is not wounded (and it is

easily avoided by an oblique direction of the knife), and either ceases entirely by a little sponging with cold water, or as soon as a strip of soft *linen* (*not lint*) is applied around the margin of the wound; indeed, I have known the hæmorrhage to cease as soon as the mucous membrane was reflected over the edge of the skin. This brings me to what I wish particularly to mention—a part of the operation that I am rather surprised to see has not been noticed by Dr. Taylor as a possible means of contagion, viz., the manner of splitting the mucous membrane.

After removing the section of skin, the vast majority of operators—professional and non-professional—*tear* the membrane, with the thumb-nails, along the dorsum of the glans until the latter is exposed, and then either turn or push it back. It may be easily conceived that injury at least may be done by this procedure, when the operator, as is frequently the case, happens to be a gentleman not specially distinguished for the good order in which he keeps his hands, and as I have many a time seen, with shockingly dirty fingers tipped with ebony-edged nails. I know, indeed, that some medical gentlemen also perform the operation in this way, but they, it is to be supposed, keep their nails in good condition. I am, however, opposed as a rule to *tearing* tissue when it can be *cut*, and I always use probe-pointed scissors for this second part of the operation; by drawing forward the membrane with the finger and thumb of the left hand, the scissors can generally be introduced without any difficulty. The strip of dry linen which I stated above I use for the first dressing, I change in two or three hours for a similar strip, wet with cold water; this being renewed at night, I have generally the satisfaction, on the following morning, of finding a clean, healthy surface, and cicatrization well advanced, sometimes almost complete. A little olive-oil or calamine cerate is applied, should the edge be pouting and red, and in twenty-four hours more there is no need of any further dressing; *scrupulous cleanliness* is all that is required.

It is greatly to be regretted that this last very necessary requisite should be so often wanting, and in so great a degree as to disgust many persons who perhaps witness the ceremony for the first time, and have their feelings of delicacy and re-

finement severely tried, to say the least, by the rough, boorish, frequently brutal conduct and bearing of the operator. This, to be sure, is in a great measure the fault of the parents of the child in employing any fellow who professes or is recommended to be a *mohel*. As suggested by Dr. Taylor, there should be measures taken to prevent ignorant and irresponsible persons from performing an operation which, simple in itself, is not unattended with some danger if not properly cared for. The remarks of Dr. Russel, in Note 2, on page 581, apply with perfect truth here in the West to many respectable (so-called) *rabbinical* operators, who never pretend to see the little patient after the ceremony is performed and they have received their fees. They frequently apply a mass of dressing, sometimes strongly impregnated with a powerful styptic—often even a caustic, such as a strong solution of carbolic acid—and direct that this be allowed to remain *until it drops off*. It is by no means an uncommon circumstance in country towns, to which a *mohel* goes by invitation on the birth of a boy, to hear the father remark: “The last boy I had circumcised was so badly operated upon, that I had to call a doctor to attend him before he could be healed.” In some cases when the dressing does “drop off,” a considerable slough comes with it, and I have known in this city of more than one case where the nurse—one who had a good deal of experience in Jewish families—had to send for the *mohel* after the lapse of eight or ten days, to remove his filthy dressing that would not “drop off.” These remarks, which are founded on actual observation, will show that there is really no small amount of malpractice among the class of men who make a regular profession, or rather a business or trade, of this operation. It is an operation undoubtedly of great value, and in proper hands is perfectly safe, but none can fail to agree with Drs. Taylor and Russel in the strongly-expressed belief that none but responsible and educated persons should be permitted to undertake it. Indeed, I am of the same opinion as Dr. Moses (*see* page 372, vol. xiv., 1871), that “the operation should be done by a *surgeon*,” but I must take this opportunity also to say that I think he was a little unjust in the remarks that closed his otherwise excellent and truly valuable article, in

casting an imputation that the reformers are desirous of abolishing the ceremony that has been inviolably sustained for four thousand years. It is indeed true that some few "enlightened" Jews in the city of New York protest against the ceremony of circumcision as "barbarous—a relic of the past, that it is time to abolish," etc., etc. But nowhere is such an opinion prevalent; I am myself a member of a very ultra-reform Jewish congregation, and there is not a single family in the community that does not hail with joy the birth of a male child, and make a feast when it is eight days old. I think, too, that the majority of them are agreed that the ceremony should be performed by an educated medical man, and, when this opinion becomes sufficiently wide-spread to pervade the mass of the Israelites throughout the land, we shall hear no more of reformers objecting to the rite, nor will there be any further necessity for sanitary committees and boards of health to investigate the question whether disease of any kind can be transmitted by circumcision.

ART. IV.—*Bloodless Operations.* By M. FIGUEIRA, M. D., House-Surgeon to Bellevue Hospital. With a Report of Three Cases in the Service of Dr. H. B. Sands, and Two Cases in the Service of Dr. James R. Wood.

SURGEONS have sought, ever since the earliest days of surgery, to render the amount of blood lost by operations as small as possible. This is especially true of amputations or other operations in which large blood-vessels are to be divided, and hæmorrhage must prove fatal unless efficiently controlled.

The dangers of hæmorrhage with respect to the patient are two :

1. Immediate death from syncope.
2. Extreme exhaustion, if the hæmorrhage is not sufficient to cause death. It is a matter of observation that patients after severe bleeding recover much more slowly and are more frequently subject to low forms of inflammation, to pyæmia, to prolonged suppuration, and internal inflammations. This is a remote but not less grave danger.

Hence different devices to control hæmorrhage have characterized and influenced the progress of surgery at different periods.

The advice of Hippocrates, to cut only through gangrenous tissue, shows how timid surgeons were, and how circumscribed was the field of surgery.

The use of the actual cautery marks a progressive period, but shows how barbarous and rudimentary surgery still remained. The introduction of the fillet by Archigenes marks another advance. The ligature introduced by Paré was rejected by Hildanus, who recommended hot knives, because the fillet did not control the circulation well enough to allow the ligature to be used without great loss of blood.

In 1674 Morell passed a stick under the fillet, and by making a torsion, entirely controlled the circulation. A century later Petit invented the tourniquet, and for the first time in so many centuries the surgeon was able, in a large number of operations, to control the hæmorrhage with some degree of certainty. This had a marked influence on operative surgery, as the improvements which then took place in the methods of amputation clearly show.

But Petit's tourniquet, although superior to any former means of controlling hæmorrhage, was not complete; for a large amount of blood was lost, in spite of the tourniquet, in every important amputation or severe operation. The main artery was controlled by it, but some collateral circulation went on all the time, and all the blood left in the limb when the tourniquet was applied was almost entirely lost to the patient, particularly in amputations. This loss of blood often turned the scale against the patient, but was considered as a matter of course, as no means were known by which it could be avoided, until a few months ago, when Prof. Esmarch, of Kiel, first brought his method before the profession. His method of preventing loss of blood during certain surgical operations consists in bandaging the limb, upon which the operation is to be made, from its extremity to a point above the point of operation, with a roll of strong, elastic bandage drawn very tightly. At the point where the bandage ceases, an India-rubber cord is passed around the limb four or five times, as tight-

ly as possible, and tied. The bandage is then removed, and the operation performed. By this means the blood is pressed entirely out of the limb and dammed above the point of operation by the elastic cord.

After the operation the arteries are readily seen and ligated, as there is no hæmorrhage; the elastic cord is then removed, some few points which bleed are tied, and the wound is dressed. Nothing can be more simple or complete; yet some serious objections have been raised against this mode of operating.

It has been said that the flaps slough more frequently by this method than by the common method.

But, of twenty-one cases reported in Germany, the greater part are said to have been healed by first intention.

Of five cases reported here, a part of one flap sloughed in one case.

On the other hand, out of forty amputations, by the old method, at Bellevue Hospital, the flaps sloughed more or less in twenty-four.

Others have objected that, after Esmarch's method, primary union is very rare—so it is after any other method. But cases of primary union have been reported, and Case III. shows it actually taking place after an amputation in the middle of the thigh.

Again, it has been objected that the saving of so much blood will give rise to congestion of internal organs. But patients requiring operation are generally anæmic, either from loss of blood or from chronic disease, and have to go through a process of more or less suppuration.

The above cases do not give evidence of such congestions, but, so far as they go, seem to show that by Esmarch's method:

1. Shock is much less than by any other method.
2. Patients recover more rapidly, and with fewer bad symptoms.
3. In cases where the saving of a few ounces of blood may secure the life of a patient, this method is invaluable, as is clearly shown by Case II.

I will conclude with the words of Dr. Sands to the class, the first time Esmarch's method was used at Bellevue:

"I believe this to be a most excellent method, and one that will soon be generally adopted by operating surgeons. We shall watch the course of this case, and see whether the procedure is attended with any disadvantages."

CASE I.—John Brush, aged twenty-four. Admitted November 30, 1873. A healthy man. On the night of admission he fell from the front platform of a street-car, and had his left leg run over. On admission, was suffering from severe shock. Pulse 120 and feeble. Surface cold. Had lost considerable blood. Examination showed extensive laceration of anterior part of left leg, and bones projecting from the torn muscles. Dr. Sands decided to amputate above the knee by Esmarch's method. Elastic bandages were applied, and above them the elastic cord passed round the limb four times. The house-surgeon performed the amputation by the circular method, under Dr. Sands's direction. As the skin was divided and muscles cut through, there was hardly blood enough to tinge the knife, and the cut surface of the muscles was pale and dry; the divided artery could be seen distinctly beside the vein, and the appearance of the parts reminded one of the cadaver. After the bone was sawed, the arteries were easily ligated, as there was no blood to obscure the view. The elastic cord above was then removed. As the last turn was taken off, the stump became rapidly red, blood oozing freely from every point. A few small branches were tied. In a little while all bleeding stopped. The stump was dressed as usual. As the patient recovered from the effects of the ether, the pulse was as full and good as before the operation; the surface was warm, and the face had not the paleness often seen after such operations.

December 1st, A. M.—Patient did not vomit, but passed a comfortable night, and slept some time. Pulse 108; respiration 32; temperature 100°.

P. M.—Pulse 140; respiration 36; temperature 102°. Patient feels well.

December 2d, A. M.—Pulse 136; respiration 32; temperature 101½°.

P. M.—Pulse 120; respiration 36; temperature 100¼°. Dressings removed. Some sloughing of edge of outer flap. Wound looks well.

December 3d, A. M.—Pulse 120; respiration 36; temperature $100\frac{1}{4}^{\circ}$. From this time the patient progressed favorably.

CASE II.—William Keggons, aged twenty-eight. Admitted December 10, 1873. A strong, temperate man. While jumping from a steam-car, fell and had his foot crushed by the wheels. Was brought to the city on the cars, and admitted to hospital twelve hours after the accident occurred. On admission was very pale, with cold and clammy surface, and pulse imperceptible. Left foot found crushed into a shapeless mass. Stimulants given by mouth vomited. Egg-whey given by rectum, and brandy subcutaneously. Rallied in about twelve hours, and was able to retain brandy on the stomach. Pulse stronger, but intermittent. Patient now seen by Dr. Sands, who thought him not in a condition for operating upon. Stimulants and nourishments continued. Four hours later, December 11th, was again seen by Dr. Sands, who decided to operate by Esmarch's method. The leg was amputated in the lower third. Dr. Wood was present, and counted eleven drops of blood lost during the operation. About one drachm was lost while tying the smaller arteries, after the cord was removed. The stump was dressed as usual. Pulse 135, and feeble. Surface warm. After three hours patient became restless and delirious, and vomited. Pulse imperceptible. After stimulants and opium, the patient fell asleep.

December 12th.—Very feeble, and vomiting occasionally.

A. M.—Pulse 144; respiration 16; temperature $102\frac{3}{4}^{\circ}$.

P. M.—Pulse 120; respiration 18; temperature $102\frac{1}{2}^{\circ}$.

13th.—Patient stronger. Complains of pain in the stump. Dressing removed. Some redness round the flaps, and serous discharge. Sutures removed, and water-dressing used. No sloughing occurred, and the patient improved steadily.

January 8, 1874.—Was able to sit up, and the wound is now closing rapidly. Temperature has ranged from 98° to 100° .

CASE III.—Barney Mulligan, aged fifty-two. Admitted October 23, 1873. Pale and emaciated. Two years ago began to have pain and swelling in the right knee, which have been growing worse.

December 29th.—Patient in fair condition. Was taken before the class, and the limb amputated above the knee, by Dr. Sands, after Esmarch's method. Lost about two drachms

of blood during the operation. Flaps united by iron sutures, and dressed as usual. Pulse, after the operation, 110.

30th.—Patient slept well last night.

A. M.—Pulse 108; respiration 20; temperature $100\frac{1}{4}^{\circ}$.

P. M.—Pulse 112; respiration 16; temperature $98\frac{3}{4}^{\circ}$.

31st.—Pulse 92; respiration 16; temperature $98\frac{3}{4}^{\circ}$.

From this time the patient progressed favorably. The wound healed by first intention.

CASE IV.—Philip Bittener, aged thirty-two. A robust man. In getting off the front platform of a street-car, he fell, and his leg was run over near the ankle-joint. Pulse feeble on admission, but no other evidence of shock.

Examination showed a compound comminuted fracture of both bones of right leg, just above the ankle-joint. Under direction of James R. Wood, M. D., the leg was amputated by C. Teniberry, M. D., house-surgeon, on Esmarch's plan. Scarcely a drachm of blood was lost during the entire operation. The ruddy appearance of the face after the operation was remarkable. Cotton-dressing was used. The first day after the operation his condition was as follows:

A. M.—Pulse 100; respiration 32; temperature 102° .

P. M.—Pulse 98; respiration 32; temperature 103° .

Second day after operation:

A. M.—Pulse 94; respiration 34; temperature 101° .

P. M.—Pulse 104; respiration 28; temperature 103° .

Patient feels comfortable, has a good appetite, and sleeps well.

January 8, 1874 (ten days after the operation).—Patient doing well.

CASE V.—T. Thompson, aged forty-five. This man had his forearm crushed by a coal-cart. Four days after the accident the injured part became gangrenous, and Dr. James R. Wood performed amputation, below the tuberosity of the radius, by Esmarch's method.

In this case the elastic bandages were applied only above the gangrenous point, to avoid infection with septic fluids. In place of the elastic cord, a piece of the bandage was used, being doubled on itself. A very small quantity of blood was lost.

January 8, 1874 (four days after the operation).—The patient is doing very well, and there is no sloughing of the flaps.

Clinical Records from Private and Hospital Practice.

I.—*Case of Intra-recto-abdominal Manual Exploration.* By CHARLES A. LEALE, M. D., New York.

At a meeting of the New York Academy of Medicine, held November 6, 1873, Dr. Leale reported the following interesting case:

Mrs. H., aged forty-five years, the grandmother of several children, at 9½ P. M., August 28, 1873, while suffering intensely from an attack of dysmenorrhœa, causing temporary aberration of mind, drank, with suicidal intent, two ounces by weight of pure chloroform. Half an hour after she had swallowed it I was at her bedside, and found that nothing had been vomited. She was lying on the bed, profoundly anesthetized, surrounded by her friends, who were in vain endeavoring to arouse her. The bottle, labeled chloroform, with a mark showing the exact quantity it contained, and which she had taken, was handed to me. I immediately endeavored to restore her by briskly slapping the cheeks and arms, and to produce emesis with the only convenient article, viz., salt-and-water. About half a drachm of the former was placed on the back of her tongue, over which were poured two ounces of cold water. This caused sufficient irritation of the fauces to make her swallow what the mouth contained, and almost immediately to eject the contents of the stomach, consisting of about half an ounce of bread in the form of an emulsion, thereby proving that the stomach was nearly empty when the poison had been taken. The *ejecta* did not emit the slightest odor of chloroform, while at the same time the expirations were strongly charged with its vapor, consequently demonstrating that the entire two ounces had been absorbed into the general circulation, and was being rapidly eliminated by the lungs. I then washed out the stomach, by the means of a pump; then injected about a pint of water (100° Fahr.) for the purpose of causing it to remove effete material by acting as a brisk diuretic. At 10.35 the pulse was 72, respirations 48, temperature of skin normal; pupils moderately dilated, not in the slightest degree sensible to the action of a bright light when a candle

was passed in front of them, nor was there the least resistance when the conjunctiva was touched.

At 10.40, pulse 80, respirations 32. At 10.47, pulse 104, respirations 40. Touching conjunctiva or pressing the point of a knife into sole of foot, and skin elsewhere, did not produce the faintest sign of reflex action. At 11.02 the pulse was 140, respirations 48, rectal temperature 97° Fahr., heart's action becoming distinctly more feeble. Surface of body cyanotic, very cold, and covered with beads of perspiration; evidently death was impending by asthenia. While withdrawing the thermometer from the rectum, I found sphincter-ani muscles so completely relaxed that it easily enabled me to guardedly employ direct irritation of the solar plexus of the great sympathetic nerve, and thereby, almost as directly, one of its plexuses, the phrenic or diaphragmatic plexus. This stimulated the respiratory act, and was speedily followed by consciousness.

The mode of procedure was as follows: While the patient was lying on her back, with head very low, to accelerate the cerebral circulation, I covered my hand and entire forearm with lard; then, with fingers held cone-shaped, the hand was slowly and with great care passed through the anus with much less difficulty than is usual when the hand is passed *post partum* into the uterus. After passing the entire hand beyond the sphincter ani, a pause for a minute was made, then the hand was gradually passed gently along the rectum until the curve and constrictions of the sigmoid flexure were reached, when another pause was made, while the finger-points were approximated cone-like; the hand was then slowly, gradually, and with great care, pressed forward; then the fingers were separated, when the constrictions were easily overcome and the hand had passed into the descending colon—the sensation imparted while overcoming the constrictions exactly resembling that produced when a partially-spoiled silk elastic is being drawn out, or to use an exact mode of communication, I should say, one-tenth tearing to nine-tenths stretching. With the hand in the descending colon, and the finger-points sixteen inches beyond the anus, I found that the hand could be passed from side to side, and up and down within the abdominal cavity, to the right side as far as the liver, and superiorly to a distance four inches above the umbilicus, at which point

the fingers could be felt and counted externally. The hand while being withdrawn was made to explore the surroundings. The return through the sigmoid flexure was without resistance, and the hand was again in the rectum, when the wonderful ease by which uterine or ovarian conditions could be diagnosed with certainty was clearly proved. As the woman had dysmenorrhœa, this gave me an opportunity to seek for its cause. With great ease the fundus uteri was grasped in the palm of the hand and examined—which was done by gliding the fingers over it with nearly as much ease as if it were examined from an opening above the pubes. The uterus was retroverted, very much hypertrophied, and, although she had not borne children for over ten years, was about five inches in breadth. At one portion quite a prominence was felt, which I diagnosed as an interstitial fibroid, of the size of an English walnut, or about four inches in circumference. The hand was then passed from one ovary to the other, and withdrawn, not having the slightest sign of blood, nor emitting any odor of chloroform. I should state that, before the woman had attempted suicide, she had thoroughly evacuated her bowels, which necessarily greatly expedited the passage of the hand.

Recovery was complete, and three days after the operation the woman was at work. My hand had been introduced sixteen inches, and the greatest dilatation of the anus was ten inches, corresponding to the largest circumference of forearm.

II.—*Chelis and Lepra.*¹ By J. L. MILTON, Senior Surgeon to St. John's Hospital for Diseases of the Skin, London.

Case of Chelis occurring on the supposed Site of an Injury.

THE peculiarities of the following case are the appearance of chelis on the shoulder (by no means a common place to find it, according to my researches), the formation of true instead of scar chelis on what seems to have been the site of an injury, and the rapid subsidence of the disease under the action of caustic soda.

¹ This paper was prepared for reading and discussion before the New York Dermatological Society. It was presented at the October meeting.

Charles C., aged twenty-three, a strongly-built and rather fine-looking young fellow, entered as out-patient at St. John's Hospital, with a large cheloid growth on the shoulder, or, rather, the upper and great part of the space between the shoulder and lower part of the neck. It covered nearly as much space as a moderate-sized woman's hand, the main portion of it, one large, unbroken patch, being somewhat bigger than the palm, from which diverged large offshoots or spurs, about the size of small walnuts with the shell off; one was about the size and shape of a man's thumb cut off at the middle of the carpal phalanx. The growth was of dense texture, very smooth, and of a lake-color. The thickness, taken in a vertical direction from the most elevated part of the surface to what ought to have been the natural level of the skin, was, as near as I could estimate it, about half an inch. Throughout its entire progress there had been no pain.

The account given by the patient was that, in his third year, when rising suddenly while underneath a table, he struck the part violently against the edge of it. The spot was badly bruised, and, in a few months after, the growth began to show itself, from which time it slowly but steadily progressed. Such was the statement the patient received from his parents, as of course his memory did not go so far back. Taking this account as correct, the disease was of nearly twenty-one years' standing. Singularly enough, he had selected an employment which compelled him to carry a heavy basket on this very part. Ulceration, apparently due to the pressure thus occasioned, had set in on two parts of the surface of the diseased growth, and it was for this symptom that he now sought relief.

The hydrate of soda was applied to two places, each the size of a shilling, and, as no particular inconvenience ensued, the use of the caustic was extended till four or five spots were cauterized at one time. The application at first gave very little pain, and was repeated once or twice a week for some time. The growth began to diminish almost from the first, and at one time I entertained hopes that I should be able to remove the whole of it, but, as it subsided, the patient began to complain more and more of the action of the caustic, and at last

refused to allow of any further applications, especially as he fancied that the chelis shrank quite as fast after the caustic had been given up as when it was being regularly employed.

On Some Cases of an Unusual Form of Leprosy.

I AM not aware whether the form of disease now to be described has been mentioned by any other author. The demands on my time have not allowed me to make any particular search to determine this point. I therefore limit myself expressly to saying that I am not familiar with any description of it, and that I have only seen four cases, but two of which occurred in my own practice.

The first case I saw was in 1867. The patient was a powerfully-built, healthy-looking countryman, who was under the care of another practitioner. On the right leg, extending from the tibia round the outer side to the back, and from a little above the beginning of the calf to about two inches below this part, was a large patch, very irregular in outline, and seemingly composed of several almost circular patches, which, in the progress of growth, had become fixed together. Except in respect to color, the surface of it strongly resembled the organization of the lichens seen on old stone-walls. The hue was, however, widely different, being more like that of the yellow milk-mushroom (*Lactarius theiogalus*) than any thing else I know—a hue composed of yellow and brown, which I find it difficult to describe in words. The patches were elevated about a line and a half or two lines above the surface, and rough to the feel. I learned from him that the part was at times covered with scales, but there were none on it when I examined the patient, whom, however, I only saw twice. Syphilis had been suspected as the cause, and he had been put through a course of treatment for this disease, but I could not satisfy myself that there was really any history of syphilis, and the treatment seemed to have had no effect whatever.

The next case was that of James F., aged forty-six, also a very strongly-built man, but pale, and of a saturnine expression of countenance, who came under my care, May 8, 1868, with apparently the same disease; the appearances being as follows: On the left leg there were several patches just below

the knee, varying in size from that of a split-pea to that of a half-penny, and there were three on the front part of the ankle. On the right leg there were three on the front and middle part of the tibia. These spots were distinctly raised a slight distance above the level of the skin. On some of the patches there were scales; others were free from them. The latter were of a pale pink-color with a sharply-defined outline, but the edge being as much raised above the level of the skin as any other part. They were, as near as I could estimate, about two lines in thickness. All the patches which I felt were hard and resisting. The scales, on those parts which bore them, were white, thinner and smaller than those of lepra, but thicker and larger than those seen in pityriasis. They were secreted in great abundance. The patient told me he was in perfect health, but, during the time he was under my care, he often complained of diarrhoea, indigestion, and symptoms pointing to congestion of the liver. No other member of his family had, so far as I could learn from the patient himself, suffered from any disease of the skin. There was no history of syphilis, and no reason to suspect any.

I tried every thing I could think of to remove the disease, but with very limited success. Among the remedies employed were a course of biniodide of mercury, with frictions of yellow nitrate of mercury ointment over the parts affected; caustic soda externally; a course of bichloride of mercury, and one of small doses of calomel; iodide of potassium, first alone, and then with liquor potassæ, aided by frictions of nitric oxide of mercury ointment; iron singly, and combined with arsenic; arsenic continued for months, accompanied toward the close of the course by vapor-baths. The patches gradually shrank, some of them to about half of their old circumference, and most of them grew much thinner; one or two of them became at times eczematous; but not one of them had entirely disappeared when, at the beginning of the present year, the patient gave up treatment. He had not always given it a fair chance, but, judging from the very slight effect produced by any of the remedies, it is doubtful if the most persevering and heroic use of them would have really influenced the issue of the case.

I did not meet with another instance of the disease till

1871, when a girl suffering in this way came under my care. She was about seventeen years of age. The disease had invaded the front part of both legs, extending from below the knee almost to the ankle. She presented, in her face and the upper part of her person, a strong contrast to the other patients, her features being so delicate as to be almost childlike, the hue of her skin fair and pale, and her frame slender; but, strange to say, the legs below the knee were of extraordinary size, the calf being quite as thick as in a strongly-made man, and the foot, though small, of unusual thickness and very fleshy. On the upper part the patches had taken on much the same appearance as in the preceding case: that is to say, they looked rather like immense pink warts, raised perhaps a couple of lines above the skin, partly covered with scales as in ordinary lepra. On the lower part of the limbs, where they were in process of formation, the spots showed like small white, pointed warts. When the hand was passed over them, they communicated the feel of so many minute horns being touched. They were as hard as corns or human nails. When removed, the skin beneath was red, smooth, and polished, as if a scale of lepra, or crust of very dry eczema, had been stripped off. The growths were quite white. I did not see the patient very frequently, but, so far as I could make out, these little spots seemed to spread and run together till they formed patches.

Arsenic was prescribed and carried to as great an extent as could be borne, but the patient's occupation did not allow her to take her medicine with any great regularity, to pay proper attention to her diet, or to make any use of baths. Still she made considerable progress toward a cure, possibly owing to her having the great advantage of youth on her side; the scales fell and the patches grew flatter and thinner. About this time, however, she began to attend very irregularly—her work, according to her account, preventing her from doing as she wished—and then ceased coming altogether.

The fourth case was one exhibited by Dr. William Stuart, at the Harveian Society, May 2, 1872. The patient was a young man, thin, and with but little muscular development. The disease consisted principally of one large patch about ten inches long and two wide, seated over the popliteal space of

the right leg. There were also here and there small isolated patches, and one about an inch in diameter was observed over one trochanter.¹ The spots were of a port-wine color, were surrounded by a lichenous eruption, and were at times covered with scales thinner and smaller than those of ordinary lepra. The disease had existed two years, and was supposed to be of syphilitic origin, but, if so, the appearances in question are, I believe, not spoken of by any author on syphilis. The patient had been treated with tartrate of iron and bichloride of mercury, a mild mercurial ointment being applied externally. Under this treatment the lichenous eruption had disappeared; the lepra, however, remained unaffected. No other member of the patient's family had suffered in the same way.

Dr. Stuart stated that he had seen but one case of the kind before, and that was at St. Louis, twenty years previously. In this instance the disease consisted of isolated elevated patches or tubercles of the size and appearance of split pickled-walnuts, seated on the outer sides of both thighs. Dr. Stuart could get no history of the case.

III.—*Case of Acardia.* By WILLIAM T. LUSK, M. D., of New York.

DURING the month of October, my friend, Dr. G. A. Wyeth, of this city, called me, at about seven o'clock in the evening, to see a case of confinement with him. His patient, who was a primipara eighteen years of age, had already given birth to a male child weighing two pounds five ounces. As, however, the abdomen had not greatly diminished in size since the delivery, it was fair to presume that a twin pregnancy existed. Such, indeed, proved to be the case. On my arrival I ruptured the membranes, which I found protruding from the largely-dilated os. After the rupture I recognized the feet of a child, and felt, likewise, a soft mass presenting, which at first I mistook for a breech. After descent, however, had taken place, so that the parts could be easily reached, I noticed that the toes of the child were directed toward the soft mass,

¹ My notes do not say which trochanter.

and that none of the bones characteristic of the pelvis could be made out. Wishing to ascertain the nature of the tumor, I endeavored to deliver by version. The firm contraction of the uterus, in spite of the induction of complete anæsthesia, rendered the accomplishment of version impossible. However, by alternately drawing upon the tumor and the feet, I succeeded in getting the mass down to the vulva. It was now nearly five o'clock in the morning, and, tired out, I left the patient in Dr. Wyeth's hands, trusting that, while I took a nap, a natural relaxation of the uterine walls would occur, and thus allow the extraction to be completed without serious difficulty.

Two hours afterward I was called up by Dr. Wyeth, with the intelligence that the delivery had been accomplished. A half hour after my retirement regular expulsive pains occurred. The descent of the mass brought one of the feet outside the vulva, to which Dr. Wyeth applied a loop. The uterine pains, aided by the tractions Dr. Wyeth was now enabled to make, sufficed in the course of an hour for the completion of the delivery. The original appearance of the fœtus is well represented in Fig. 1 (*see* frontispiece).

It was at once recognized as an acardia. It should be here stated that the mother reckoned herself to have been seven months advanced in pregnancy. Sixteen hours elapsed from the beginning of labor to the birth of the first child, and thirteen hours subsequently elapsed before the delivery of the acardia.

The weight of the monstrosity was three pounds and nine ounces. The lower extremities, as far as the feet, were well developed. There were but two toes on the right foot. On the left foot there were two toes completely formed, and a small appendix composed of skin, which was evidently the rudiment of a third toe. Each foot had three tarsal and three metatarsal bones. The skin and underlying connective tissue was œdematous, and the muscles complete, but so pale, and so closely adherent to the connective tissue, that their preparation required a great deal of care. Scrotum and penis were well developed. A loop of intestine protruded from the umbilicus. The cord did not exceed a goose-quill in di-

ameter. The upper portion of the foetus consisted of two globular sacs, composed of skin, which was greatly hypertrophied, and through which a distinct fluctuation could be made out. There was a small bunch of hair situated just at the upper junction of the sacs.

Upon opening the tumor, it was found to be filled with gelatinous matter, partly free, and partly contained in cysts. In the anterior portion were situated the vestiges of the trunk. The cervical, dorsal, and lumbar vertebræ, and ribs, were complete. There was a pyramidal bit of bone loosely connected with the upper cervical dorsal vertebra, which constituted the sole representative of the skull. As usual, there was complete absence of the sternum. The kidneys were well developed; the right kidney, owing to the absence of the liver, was situated somewhat higher than the left. The ureters were both present, and opened into a small-sized bladder. A single artery and vein were situated over the vertebral column. Two bodies, supposed to be the testicles, were found near the internal abdominal ring. There were no traces to be found of either heart, lungs, stomach, pancreas, liver, or spleen. The intestine, which was about two inches long, protruded, as we have seen, from the umbilicus.

The communication between the two umbilical veins was situated just at the insertions of the two cords into the placenta. A thrombus had formed in the communicating branch, which nearly closed the umbilical vein coming from the acardia, while the circulation in the umbilical vein of the well-formed child was undisturbed. A communication between the umbilical arteries was not detected, though doubtless present.

The accepted theory of the origin of this monstrosity may be briefly stated as follows: The acardia is always one of twins. Both children are developed from the same ovum, are of the same sex, and are contained in a single chorion. Each foetus has, however, usually its own amnion. There is a single placenta, but two capillary systems, which communicate. Sometimes it happens that, by means of large communicating vessels, the two foetal circulations in the placenta form a more intimate union with one another. Then, in case

each foetal heart beats with equal intensity, the result would be an arrest of the circulation in the communicating branches, with formation of thrombus. When the heart's action in one foetus counterbalances that of the other, the stronger blood-current in the placenta would push back the weaker one, at first impeding the circulation of the less favored foetus, then arresting it, and finally causing it to take an inverse direction. The heart then atrophies. The acardia becomes simply an appendage to the healthy foetus, the circulation going on as follows: Venous blood from the healthy foetus is conveyed by the umbilical arteries to the placenta. The force of the healthy foetus's heart then carries it through the communicating branches to the umbilical arteries of the less favored twin. This force, however, is insufficient to carry the current to the upper parts of the body, which therefore are not developed. The favorable position of the lower extremities for receiving the blood from the umbilical and the pelvic organs explains their further though imperfect growth and development. The blood carried to the foetus by the umbilical arteries is returned by the umbilical vein. The mother made a good recovery.

IV.—*Case of Obstruction of the Bowels from Undeveloped Large Intestine, in a Child recently born.* By B. HADRA, M. D., Austin, Texas.

Was called during the month of September, 1873, to see a child newly born. Found that the bowels had not acted, although the child was twenty-four hours old, and the midwife had several hours previously administered castor-oil. Development, so far as external appearances showed, was perfect; weight was eight or nine pounds, sex male. The infant was vomiting some yellow, offensive matter, had not nursed for several hours, and appeared in a partial stupor. From time to time crying, evidently suffering from colic, attended by cramps. The upper part of the abdomen was very hard; the cutaneous veins around the umbilicus were very much enlarged. The bladder was empty, urine had passed freely, and was natural in quality. We endeavored to inject clear water into the

rectum, but it returned immediately unchanged in character, without the least sign of having come in contact with fecal matter or meconium. An attempt was made to insert a flexible catheter, but it entered only about two inches and met with some impediment to its passage which could not be overcome; water injected through the catheter returned as before unchanged. We diagnosed some abnormal condition of the parts; thought it probable that the rectum terminated in a blind pouch; a communication of the rectum with the bladder was out of the question, as the urine had passed normal through its natural channel. We proposed to the parents to call a consultation, and, if agreed upon, to make an artificial anus.

Dr. Weisselberg came and regarded the condition of affairs as I did, but we failed to obtain the consent of the parents to the performance of the operation. Some calomel was administered, just in order not to omit any thing that might render probable aid. The child died ten hours afterward, laboring under painful convulsions, and without having had any passage from the bowels.

Post-mortem Examination.—The abdominal cavity was full of excrementitious matter of *brown-yellowish* color, pouring out from a rupture of the ileum, which was in different parts gangrenous; at the seat of the rupture perfect mortification existed to a large extent. The cæcum was extremely small and lying near the umbilicus; contained some fecal matter. The entire extent of the colon and rectum was of the size of a raven-quill. The rectum made a short bend, forming a loop, which accounted for the impediment to the passage of the catheter. This undeveloped intestine was filled with white, cheese-like matter, of the appearance of vernix caseosa. As it was some miles distant from the city, and as we unfortunately lost the sample taken, we did not examine it more definitely. The valvula Bauhini was normal. The *post-mortem* examination has shown that this case was not one that could have been remedied by the operation for artificial anus in any of the regions where it is commonly performed, but shows the necessity of speedily operating in every case where the physician diagnoses obstruction in the rectum; so soon as in thirty-four hours the bowels were in such a condition of gangrene as to have proved fatal under any circumstances.

Besides this, the case was interesting from two other reasons: 1. It shows that the dark color of the meconium is produced by some change wrought upon it in the large intestine. 2. I believe that the contents of the colon and rectum were of the same nature as the vernix caseosa; the origin of this somewhat questionable product might be ascribed to the epithelium and to the glands of those intestines, just as to the glands and to the epithelium of the skin, a supposition which would in no way interfere with the doctrines of evolution. We regret not to have made a microscopical examination; but I do not believe we were mistaken in our judgment of the character of the contained matter.

V.—*Case of Ovariectomy; Chronic Peritonitis, with Effusion; Extensive Pelvic Adhesions; Use of Bichloride of Methylene; Recovery.* By CHARLES H. RICHMOND, M. D., Livonia, N. Y.

A CONDENSED report of this case is given, not only with a view to place upon record all cases, with their results, but principally on account of the peculiarities it presents.

In April, 1872, Mrs. B., of Livonia Station, N. Y., supposing herself to be six months advanced in pregnancy, consulted me concerning the continuance of the catamenia, which had been regular to that time. Her age was twenty-four, health previously good, and had been married four or five years, without bearing children. On examination I diagnosed ovarian cyst. Most of the time after this, for a year and a half, she was under the care of an irregular practitioner, who for several months treated her for pregnancy, and afterward subjected her to a variety of treatment, including the dilatation of the uterus with sponge-tents, which, by-the-way, was done with the advice of a neighboring physician. The tents were left in place sometimes three days at a time.

In October, 1873, I was again consulted, and found Mrs. B. suffering very much from distention, loss of appetite, short breathing, pain, and emaciation. On the 1st of November I removed about twenty pounds each of dark and straw-colored

fluid, with a Dieulafoy's aspirator, from the abdominal cavity. The dark fluid contained an abundance of cholesterine-crystals; both coagulated under the influence of heat, and both contained corpuscles which appeared, under the microscope, to be similar to those described by Atlee and Peaslee. Wells describes cysts as sometimes containing two or more kinds of fluid, and it was my opinion that this was a case of multilocular tumor. This opinion was somewhat strengthened by the fact that there was little or no œdema of the lower limbs.

The tapping, although not entirely emptying the abdominal cavity, afforded marked relief, and permitted the patient to gain some strength prior to an operation. As the enlargement began shortly to increase, an operation for the removal of the tumor was decided upon December 1st, about two years after its first appearance. At this time her general condition was fair, although she was much emaciated. She measured thirty-six inches around the umbilicus.

Accordingly, on December 1st, at 12.30 p. m., in the presence of and assisted by Drs. Craig, Chase, Bennett, Patterson, Rowland, and Wilbur, the patient being placed under the influence of bichloride of methylene, by Dr. Patterson, I proceeded to operate in the usual manner. On reaching the peritonæum, that membrane was found congested and thickened, and it bulged through the wound, indicating the presence of free fluid within its cavity. It was laid open on a director, and a large quantity of serum escaped. The whole peritonæum presented a congested and thickened appearance, and on its surface, in places, were found inflammatory excrescences.

The tumor, probably weighing twenty or twenty-five pounds, had some intestinal and very extensive pelvic adhesions, so that its lower surface could not be defined. After tapping, and separating some of the abdominal adhesions, I determined to enucleate it, commencing from its posterior surface. The cyst, however, seemed considerably thickened, and the fibrous coat was ill defined, so that its separation was very difficult, and after turning out the tumor proper, and obtaining a sufficient length of pedicle from its anterior surface, I applied the clamp and cut away the mass, thirty-eight minutes after the commencement of the operation.

Only one artery was tied, where one of the abdominal adhesions was separated, using fine strong silk, previously soaked in solution of carbolic acid. A considerable oozing continued, which was only controlled by the free use of persulphate of iron, one hour and thirty minutes after the commencement of the operation. The tumor, on dissection, proved to be multilocular.

Immediately after the operation, morphine was administered in repeated doses, to quiet pain. The patient rallied well. Fever supervened during the night, but subsided, in a measure, toward morning. During the next day the fever became intense—circulation 144, which, at night, had fallen to 120. I had broken my thermometer, so that the temperature could not be recorded. Some fever, vomiting, and tympanites continued for a few days, indicating some acute peritoneal inflammation. These symptoms, however, except the tympanites, gradually subsided; the wound healed well, and the stitches (silk) were removed on the fifth and sixth days. The clamp was removed on the twelfth. The patient was sustained by iced champagne and brandy, and enemata of beef-tea and quinine.

After seven or eight days a serous discharge occurred near the pedicle, and continued until the fifteenth, when it became sero-purulent, and having a somewhat offensive odor. Patient suffered mostly from flatus; the pulse ranged during this time from 104 to 108 per minute. From the seventeenth to the twentieth, and again on the twenty-fifth day, considerable quantities of membranous sloughs were discharged, with black, gritty particles—probably persulphate of iron—through the opening near the pedicle, their passage being attended with considerable pain. Efforts were made to withdraw the fluid and inject solution of carbolic acid, by means of the aspirator, but without much success. The purulent character of the discharge continued for a few days after the passage of the last slough, but gradually became serous, until about the 3d of January, 1874, when it all ceased, and the opening became closed. After the sloughs passed out, the patient gained strength more rapidly, although she still suffered somewhat from flatus. The pulse fell from 96 to 72 and 84, and she was able to be about the house and ride out within a few days.

In this case the operation could not have been safely accomplished without a partial enucleation, yet the thickened walls of the tumor prevented its complete enucleation. The question arises, Is enucleation liable to be followed by sloughing of the retained membranes? In a review of Spencer Wells on "Diseases of the Ovaries," in the November number of this JOURNAL, I stated that enucleation was likely to supersede all other methods in a certain class of cases. Judging from the sloughing which occurred in this case, I should be inclined to modify that opinion so far as to limit that class to cases attended with extensive adhesion, or possessing a very limited pedicle. However, the unhealthy state of the peritonæum may have contributed somewhat to the sloughing.

The effect of the anæsthetic was rapid, and, although continued for an hour and a half, the patient readily reacted, without vomiting or general uneasiness. The recovery of the patient, under all the circumstances, may be considered remarkable.

VI.—*Case of Lumbar Hernia.* By WELLINGTON N. CAMPBELL, M. D., Senior Assistant to Reception Hospital, West Ninety-ninth Street, New York.

THOMAS WHELAN, four years of age, born in this city, was brought to the Out-Door Dispensary of this hospital, on the morning of November 22, 1873, for the treatment of an abscess, as the father called it. We were directed to the spine as the seat of trouble, from the peculiar aspect of the patient, which is so characteristic of spinal disease. On examination, was found a convex curvature of the spinal column, at about the middle of the dorsal vertebra, which was first noticed by his parents two years ago, and which very gradually increased in size. Eighteen months ago an abscess formed in the left loin between the crest of the ilium and the last rib. After attaining a considerable size, it was lanced by a surgeon in attendance, and much pus discharged therefrom. A poultice was then applied, and it continued to discharge up to the 1st of last May, at which time they discontinued the poultice, and the wound closed.

One month following the closure of the wound, another tumor made its appearance, which gradually increased, and the father, deeming it advisable to have it lanced as before, brought his child to this dispensary. The tumor was found to be situated at that point where the quadratus lumborum and latissimus dorsi intersect the external and internal oblique muscles. It was then about the size of a goose-egg, soft and fluctuating to the touch; tympanitic resonance was obtained on percussion, and, upon performing taxis forward and inward, it was reduced, followed by a rumbling or gurgling sound, reappearing upon the patient's coughing or making muscular exertion.

From these signs it was diagnosticated to be a lumbar hernia, due, in all probability, to disintegration of the muscular fibres of these muscles, owing to the long-continued discharge from the abscess above mentioned. It was reduced, and a compress and bandage applied. The case was presented to Prof. Mott, at his clinic at Bellevue College, on the following Wednesday, and he confirmed the above diagnosis.

In looking over the literature of the subject, I find that Gross makes mention of but four cases of lumbar hernia, Holmes of one, and Erichsen of none.

Correspondence.

LETTER FROM BOSTON.

The Recent Cases of Death from Ether.—The Massachusetts General Hospital.
—Training-School for Women.

Boston, January 15, 1874.

Just now the ether-cloud, which enveloped us for some weeks, is slowly rising.

We had rather bad luck in the matter, for no sooner was the McCrie case settled, ether vindicated, and chloroform indicted, than the Homan case occurred, in which it was not so easy to vindicate the ether, though it was finally vindicated, it being anæsthesia, and no specific quality of ether, which, with other conditions, caused the death.

You remember the two cases: the first that of Mrs. McCrie,

who died in the dentist's chair, while partially under the effect of a mixture of ether and chloroform, and where the chloroform was held responsible by experts, and a verdict so rendered; the second case, that of Mrs. Homan, of Lynn, who had a pelvic abscess; this was tapped through the vagina while the patient was completely etherized. By the time a pint of pus had been evacuated the patient was noticed to have stopped breathing, and she did not breathe again. Eight and a half ounces of ether were given in the second case. Dr. Graves, of Lynn, was the attending physician, and Dr. Bixby, of Boston, performed the operation.

There were some curious circumstances connected with the second case, which attracted considerable attention. The two physicians used artificial respiration and electricity for a proper length of time, and then, finding no signs of life in the patient, left the house. A homœopath was soon called, and "was told it was a woman who had taken ether and been left for dead." He felt the patient's pulse, and thought he could feel it beat, but, not being sure, he requested that "the people should leave the room, the clock be stopped, and the door shut." Sure enough, he then felt the pulse beat!

"Then," according to testimony (*Advertiser*, December 11, 1873), "placed the ear over the heart and could feel it beat—could feel about thirty-five or forty beats a minute. His own pulse was ninety-six. Asked how long since the doctors had left; was told about an hour. He ordered vinegar, whiskey, and ice. . . . He thought there was an attempt by patient to swallow the dose. . . . All of the doses passed down the throat. . . . The eye was as in life. The vinegar and whiskey were given as an antidote to the ether. The ice was not applied until after half an hour. He did not attempt artificial respiration, because he had been told that the other doctors had done so."

Dr. Pinkham, the coroner, then testified, and stated his connection with the case. "Said he was summoned, and a person is supposed to be dead when a coroner is called. He was not sure whether he heard the heart or pulse beat, but thought he did not. . . . A paper was dipped in alcohol and burnt next the skin. It produced no redness, showing there was no circulation. He was sure she was dead."

Dr. J. O. Webster, of Lynn, who made the autopsy, testified: "Found traces of old inflammation over the pericardium; the liver was healthy, but there were traces of old inflammation on its surface; kidneys were tolerably healthy; the bladder was in a state of chronic inflammation; the womb was very much enlarged; both ovaries were transformed into a tumor of the variety called 'dermoid cysts.' . . . Below these tumors, between the wound and the bladder, was the empty sac of an abscess which had been ruptured. . . . Other organs were healthy. The condition of the heart indicated weakness; it lay perfectly flat, though healthy. The patient was exceedingly feeble, from the appearance of the body, but *she could have stood several blows without being materially injured.*"

The sister of the patient tried to prove that Drs. Bixby and Graves were in a great hurry, for "one of the instruments was found under the bureau, another by the closet-door, and another in the towel, covered with matter." Dr. Bixby said he left the instruments, fully meaning to return.

The autopsy I have given you, to record exactly what state the organs were in, and a little of the other testimony, to show what a chance there was to throw discredit on the operating surgeon and attending physician. The statements of Mrs. Hoeman's sister and step-daughter were very malevolent, and added, of course, much to the excitement created in the public mind. For several days the newspapers teemed with the particulars of the inquest. First, there appeared on the bulletin-boards: "Death from Ether;" "Another Death from Anæsthesia;" and then "New Developments;" "Later Particulars," etc. From the fact that, only a short time before, the McCrie case had happened under really startling circumstances, thus bringing the subject of anæsthesia prominently before the public, the second case was carefully watched. The effect has been to make people a little more conversant with anæsthetics, and the lower orders somewhat shy about taking ether.

The expert testimony taken at the two trials was quite different in character. At the first inquest, Drs. Bigelow, Cabot, Hodges, Gay, and Clark, all connected with the Massachusetts General Hospital as surgeons, and very familiar with

etherization, testified as you probably remember ; they agreed that ether could be given at least ten or fifteen minutes to a healthy person without injury. While Dr. Cabot said that two-thirds of a tablespoonful of chloroform might be fatal, Dr. Bigelow said ether might be dangerous where the patient was very weak, from its narcotic properties, as an overdose of opium is dangerous.

The mixture of ether used in the McCrie case was said to be two-fifths chloroform and three-fifths ether, and those two-fifths had to take the responsibility of the death, as Dr. Bigelow said there was chloroform enough in the mixture to kill an adult, but not enough ether to hurt a child.

The expert testimony in the second case was not so strictly surgical as in the first. Drs. Bowditch, Minot, H. R. Storer, and L. F. Warner, were the experts from Boston.

Dr. Bowditch "considered ether the most valuable remedy in the whole materia medica; he had never had any fear in administering it until last year, in cases where there was purulent fluid in the chest; in such cases he advised the greatest caution in the use of anæsthetics, ether included." Dr. Minot "considered the operation performed as a very trivial one, and thought that it could have been performed without the use of anæsthetics and without injury to the patient; he thought death in this case was attributable to various causes, and ether was one of them."

Dr. Warner (*Daily Advertiser*) "thought that the widely-taught theory, that ether was perfectly harmless, was wrong, and he believed that, if it were not so widely taught, there would be fewer deaths than there are now; as an expert, he should say that ether caused the death of Mrs. Homan; he also was of the opinion that the patient would have survived the operation if ether had not been used."

Dr. Burnham, of Lowell, "thought that chloroform was not more dangerous than ether; he cited a case of death from ether in his own experience; the death resulted from over-anæsthesia."

That ether is perfectly harmless has long been taught here, and young physicians have had no more fear of using it than they would have of using water.

At the Massachusetts General Hospital large conical sponges are used for etherization, and the ether is sopped on to them until they are dripping wet, so that the ether runs off them into the patient's neck. No matter how old, young, feeble, or nervous, the ether is administered in any quantity until the patient is anæsthetized. The average amount of ether used in each case operated on must amount to half a pound, I should say. But chloroform, the *Medical and Surgical Journal* says, may produce fatal results if given to the extent of twenty drops.

Ether harmless, chloroform fatal in twenty-drop doses, was the Boston opinion of anæsthetics.

Not long after the first case had been decided, the annual meeting of the Massachusetts Dental Society took place, and it was "resolved," after much discussion, "that, in the opinion of the Massachusetts Dental Society, the use of chloroform in dental operations is not advisable."

Some of our readers may not have visited the Massachusetts General Hospital, the field of so many surgical triumphs, the birthplace of ether, and the seat of all that is newest and oldest in medicine—the hospital is held as almost sacred by Bostonians. What hospital in the world has such an operating theatre? The room seats four hundred students, who sit at their ease on chestnut seats, and who, when not watching an operation, can gaze on a large painting of some unknown landscape, in front of them, or turn around and admire the plaster legs of an Apollo Belvedere behind them!

Descending into the arena, with its well-polished floor, the eye is first struck by the large collection of instruments; these are stored carefully up in four very handsome cases, under lock and key. All the most modern instruments may be seen, in some cases arranged in fantastic shapes. The "house-pupils," as the house-surgeons are boyishly called, have the keys of these cases, and wash the instruments (forever, it seems to the spectator) after operations; a speck on a knife, or a misplaced probe, is certain to be commented upon, so carefully are the house-pupils taught habits of surgical neatness. In one of the cases, in distinguished retirement, lies the sponge with which ether was first administered in this hospital, a

monument to the glory of the hospital. In the middle of the arena stands the "Bigelow operating-chair," alone in its grandeur; though in constant use for twenty years, its numerous joints are not yet stiff, and I will venture to say there is no physician within one hundred miles of Boston who is not familiar with its peculiar creak.

A long passage leads from the main building to the amphitheatre. The patients are brought down from the wards, by an elevator, to the passage, and then carried down to the etherizing-room, which is at the stage right of the amphitheatre—here they are etherized, and then carried through a room with very strong light, called the "glass-room," which connects with the theatre, and may be shut off, by means of folding-doors, into the arena; from the arena the patients are carried out of a door at the opposite side into the "recovering-rooms," where they remain until the state of anæsthesia passes off. There is no noise of screaming patients, bustle, or confusion, nothing but the house-pupils and ward-tenders skipping about in their slippers; and you have very much the same feeling, while waiting for the first operation, that you have at the theatre before the curtain goes up.

It would be hard to over-estimate the nicety of the linen, the whiteness of the compresses and bandages, and the general care and promptness observable throughout the operations.

The hospital accommodations have for a long time been found inadequate to the demands of the hospital, and recently two new buildings have been added. These buildings are wood, sheathed in galvanized iron, and connect with the passage-way above spoken of. One of them is open up to the roof, the rafters showing, making in this way a large extra space for air; this building is to be used as an accident-ward. The other is to be cut up into separate rooms. These wards were to be occupied by the middle of January. It is unnecessary to say that they will be fitted up with all the modern improvements.

A training-school for nurses was established in connection with the hospital, about November 1st. There have been on duty, so far, eight of these nurses, under the charge of Mrs. Bil-

lings, an old and experienced nurse. They have had the care of the worst cases, and have shown themselves able and interested, but a "new broom" is always *à propos* of hospital nurses.

A few months ago an ambulance was started in connection with the hospital—the only one in Boston—and it has been found exceedingly useful.

FORCEPS.

Proceedings of Societies.

NEW YORK ACADEMY OF MEDICINE.

ANIMAL VACCINATION.

At the stated meeting held December 4, 1873, Dr. F. B. Foster read a paper on animal vaccination, submitting the following propositions:

I. Vaccination of the human subject with animal vaccination is attended with a degree of success, as regards the protection of vaccination, equal to that obtained by any other method of vaccination.

II. The vaccina produced by animal vaccination is genuine, and is as thoroughly protective against small-pox as the protection obtained by the use of any other form of vaccination.

III. The use of animal vaccine does not entail the dangers of severe local inflammatory affections, or general febrile complications, generally attributed to it by some writers. The dangers or complications are rare. Some unfortunate results have been reported relative to subsequent erysipelatous affections; but the same results have been realized from the use of other virus, and the objection does not hold against animal vaccine alone.

IV. Animal vaccine, as equal with humanized vaccine, is capable of preservation for a considerable length of time, for transmission to remote parts.

V. The use of animal vaccine eliminates one of the suspected elements of causing syphilis, and helps to silence the anti-vaccine agitations.

VI. Animal vaccine is the most trustworthy safeguard for the supply of material in emergencies.

Some discussion ensued, in which Drs. Leaming, O'Sullivan, Caro, Janes, and Lusk, took part, Dr. Foster explaining and defending his position.

MEDICAL DEPARTMENT OF THE UNITED STATES ARMY.

At a stated meeting of the Academy held January 8, 1874, a committee consisting of Drs. J. C. Peters, Gurdon Buck, and Frank H. Hamilton, appointed at a previous meeting, presented the following resolutions, which were unanimously adopted:

Resolved, That the New York Academy of Medicine does hereby cordially unite with the American Medical Association in the memorial to Congress in support of a bill to increase the efficiency of the Medical Department of the Army of the United States, now before that honorable body.

Resolved, That this Academy considers it an act of justice that the members of so important a branch of the service—gentlemen of the highest professional attainments and excellence of character, and charged with such weighty and responsible duties—should hold the same relative rank and enjoy the same emoluments as members of the other staff corps of the Army.

Resolved, That it be respectfully urged upon the members of Congress of the city and county of New York to use their influence in support of the bill in question.

Resolved, That a copy of the above resolutions, duly authenticated, together with a copy of the memorial pamphlet, be forwarded to each member of Congress.

Resolved, That a copy of these proceedings be furnished for publication in the medical journals of this city.

W. T. WHITE, M. D., *Recording Secretary*.

THE DEATH OF DR. JONAS P. LOINES.

A COMMITTEE, consisting of Drs. J. H. Hinton, J. R. Wood, and R. J. O'Sullivan, presented the following resolutions, which were unanimously adopted:

Whereas, The members of the New York Academy of Medicine are called upon to mourn the death of our friend and fellow-member, Dr. Jonas P. Loines, who died at his home, in Westchester, on December 15, 1873:

Resolved, That while we bow with humble submission to the will of

our heavenly Father, we deeply mourn the loss of an earnest and zealous member of our Society, whose cultivated mind and genial heart made him an ornament to society, and endeared him to all who knew him; and we hereby desire to express our regard and veneration for him as a Christian man.

Resolved, That, as members of the medical profession, we deplore the loss of an experienced laborer in the field of vaccination, and also in general medicine, whose declining health and physical infirmities in no wise stayed his labor, nor abated the sympathy for those to whom he was accustomed to minister, living for the interests of his fellow-man, and leaving as an inheritance to his fellow-laborers a bright example and a spotless character.

Resolved, That we tender to the widow, the foster-children, and the family of our deceased friend, our heart-felt sympathies in their bereavement, and would comfort them with the hope that what is their loss is his gain.

Resolved, That a copy of these resolutions be sent to the family of Dr. Loines, and that they be published in such medical journals as the Academy may direct.

AUSTIN FLINT, M. D., *President*.

W. T. WHITE, M. D., *Secretary*.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

THE adjourned annual and stated meeting was held November 24, 1873, Dr. Ellsworth Eliot, President, in the chair. On motion, after reading the minutes, the annual meeting was adjourned *sine die*.

The following gentlemen were duly admitted to membership: Drs. David B. Hunt, John G. Curtis, and Thomas A. McBride.

The following standing committees, for the ensuing year, were announced by the chair:

Library Committee.—Drs. C. A. Leale, *Chairman*; J. G. Frazer, T. H. Holgate.

Committee on Intelligence.—Drs. F. A. Castle, *Chairman*; L. D. Buckley, D. C. Carr, W. H. Katzenbach, R. J. McKay, P. B. Porter, Isaac Adler, Eugene Peugnet, Mary Putnam Jacobi.

Committee on Diseases.—Drs. Charles P. Russel, *Chairman*; George Bayles, A. B. De Luna, George H. Humphreys,

T. H. Kellogg, J. V. S. Wooley, Gouverneur M. Smith ; and the members of the Meteorological Committee, viz., Drs. D. H. Goodwillie, J. W. S. Arnold, R. P. Lincoln, A. B. Judson.

Committee on Finance.—Drs. J. E. Janvrin, E. Bradley, H. P. Farnham.

Committee on Hygiene.—Drs. Moreau Morris, *Chairman* ; E. H. Janes, Charles P. Russel, S. A. Raborg. [Three vacancies.]

The death was announced of the following members : Drs. James L. Brown, T. Conant Foster, G. Michelena, Josiah C. Nott, Lewis Tice, Gilbert Totten, Samuel Blois, and A. Clark Corson.

The President having congratulated the Society on its prosperous and peaceful condition, the paper of the evening, on “Ophthalmoscopic Optometry,” was read by Dr. Herman Knapp.

NEW YORK LARYNGOLOGICAL SOCIETY.

Regular Meeting, Thursday, December 11, 1873, at No. 230 West Forty-third Street.

Dr. McBURNEY *in the chair.*

DR. BEVERLEY ROBINSON introduced for examination a colored woman, aged fifty, cook, with incomplete loss of voice and obstructed respiration. Laryngeal inspection showed congestion of ventricular bands and vocal cords, and evidence of old ulcerations on left cord. Below anterior commissure, and partly covered by left cord, was seen a red pedunculated growth, size of a small pea, with smooth, distinct outline. Another smaller growth was also seen under middle portion of same cord. Nature of growth not determined. Dr. Robinson proposed to operate when condition of patient would warrant it.

Dr. CHARLES McBURNEY presented a woman, aged twenty-six, singing-teacher. When first seen, March 25, 1873, her glottis was nearly filled by a large papillary growth, attached to upper surfaces and edges of both vocal cords, the inter-

arytenoid fold being alone free from growth, air entering only by an aperture one-fifth of an inch in diameter, and voice reduced to a barely audible whisper. Dyspnœa and emphysema. Entire growth removed in five sittings, by Störek's guillotine and Mackenzie's forceps. Nitrate of silver and chromic acid applied after removal. Subsequent recurrence of small masses in July and October, which were removed like original growths. Conversational and singing voice restored.

Dr. McBURNEY also presented a man, aged thirty-five, cigar-maker, who, when first seen, November 13, 1873, had on left vocal cord, at junction of anterior and middle thirds, a small tumor, size of a pea, attached by small pedicle to edge of cord. Loss of vocal power increasing for one year. Voice loud, but very harsh. Larynx very sensitive. Tumor removed with Mackenzie's forceps, a small strip of mucous membrane being torn from upper surface of cord, and coming away with the growth. No trouble followed. Natural voice restored.

Dr. ROBINSON introduced another patient, a man, aged sixty, a mason, with paralysis of left vocal cord, which developed three weeks after having received (October 25, 1873) a blow from a fist on right side of neck, which was followed by immediate aphonia, dyspnœa, and dysphagia. Slight improvement in function of the vocal cord has followed treatment of benzoated vapor to larynx. Dr. Robinson remarked the rarity of analogous cases, and expressed the conjecture that the trouble was due to direct injury of pharyngeal plexus. Dr. Robinson proposed to exhibit strychnine, and apply faradaic current to affected cord.

Dr. GEORGE N. LEFFERTS then presented drawings of an instrument devised by Dr. Schrötter, of Vienna, for continued dilatation of constricted glottis after laryngotomy had been performed, and described in detail its adjustment and operation.

After executive session, the Society adjourned.

Bibliographical and Literary Notes.

ART. I.—*A Practical Treatise on the Diseases of the Ear, including the Anatomy of the Organ.* By D. B. ST. JOHN ROOSA, M. A., M. D., Professor of Diseases of the Eye and Ear in the University of New York, etc., etc. Illustrated by Wood Engravings and Chromo-lithographs. New York: William Wood & Co., 1873, pp. 535, 8vo.

THIS long-expected volume, after having been for some time heralded by the publishers as "soon to appear," "in press," etc., is at last before us. The author has been for so long prominently before the public, as a specialist in this department, that much is expected of him. Let us see how well he has performed his task. The body of the work begins with an interesting sketch on the progress of otology, embracing the investigations in the anatomy of the ear, from the earliest times up to 1858, and in aural therapeutics from Asclepiades to the present date. The early history and progress of any department of medicine are both interesting and instructive, and this chapter forms a very happy feature of the work. Chapter II. is devoted to the anatomy of the external ear and auditory canal. The anatomical illustrations here, as elsewhere throughout the book, are mainly taken from the German, especially from Henle's plates and Rüdinger's photographs, for which, however, both in the preface and at the end of the chapter, proper credit is given.

Chapter III. considers the method of examining aural patients. The importance of resorting to a systematic or routine method of examination, as well as of recording each case, is strongly insisted upon. For recording the hearing distance, preference is given to the method recommended by Dr. Prout, which consists in recording the hearing-power as a fraction, the numerator of which is the distance at which the particular sound is heard, the denominator the distance at which it should be heard by an ear of good, average hearing-power. The value of the tuning-fork, in differential diagnosis between diseases of the middle ear and of the auditory nerve, is fully discussed. In describing

the use of the aural mirror, or, as Prof. Roosa prefers to call it, "the otoscope," he refers with evident pride to the fact that he was the first to introduce its use in New York. Binocular otoscopes do not find favor with our author. He thinks that the advantages which they offer of binocular vision are not sufficient to atone for the loss of simplicity and want of cheapness. Judging from the rarity of their use in our clinics and infirmaries, we are inclined to think this is true. The important relation which diseases of the throat and nose bear to diseases of the ear does not seem to receive sufficient attention, the examination of the pharynx and rhinoscopy being passed over in a few pages.

We do not attach so little importance to the value of the auscultating tube as Dr. Roosa does. It is, for us, not only a useful means of determining whether the catheter be in the mouth of the tube, but also gives some indication as to the condition of the tympanum.

The different methods of inflating the middle ear are discussed, and their importance insisted upon. We think, however, that it would be somewhat difficult to "place an air-bag into one of the nostrils," as we are told to do, on page 98. In Chapter IV., the functions and diseases of the auricle are treated of. The subject of othæmatomata receives considerable attention, and the views of Virchow, Brown-Séquard, and Hun, as to its etiology, are given, together with some very good plates from Hun. The other chapters in this part of the book (from V. to VIII. inclusive) treat of the diseases of the external auditory canal. We pass by the chapter on the different forms of otitis externa, to that on parasitic otitis. In this chapter we have a good *résumé* of the literature of the subject of fungous growth in the ear, with some drawings illustrating the histology of aspergillus.

Drs. Orne, Green, and Knapp, are quoted as agreeing with the author, that warm water is the only parasiticide necessary. This, however, does not accord with the experience of Dr. Gruening, of this city, who recently reported two cases of aspergillus to the New York Ophthalmological Society, in which, after syringing the ears twice daily for some time with warm water only, the growth always returned in a few hours,

and, when carbolic acid was added, a cure was at once effected. Chapter VII. is on inspissated cerumen, and Chapter VIII. on foreign bodies in the ear. The latter chapter is very interesting. It contains a synopsis of a paper by Ludwig Mayer, in which are collected all the cases of foreign bodies in the ear that he has been able to find in the literature of fifty years. A very instructive case is likewise quoted from Pilcher's book on the ear, to show the folly of exploring the ear for a foreign body which has not been seen.

Part II. contains seventeen chapters, which treat of the middle ear, including the anatomy of the organ. The whole of chapter IX. (40 pages) is given to the anatomy of the middle ear. It is mostly condensed from Henle and Gruber, and gives as well the more recent investigations of Kessel and of Rüdinger, on the anatomy and functions of the Eustachian tube.

Chapter X. contains an interesting account of the effects of condensed air upon the membrana tympani, as observed by Drs. Smith, Green, and Magnus. In Chapter XI., a form of acute aural catarrh is described under the name of "otitis media hæmorrhagica," in which "the course of the disease is very acute, and terminates rapidly in perforation of the membrana tympani, without suppuration, but with quite an abundant hæmorrhage through the drum-head. It seems to us quite unnecessary to make such a distinct form of disease. The hæmorrhage may be, and most likely is, an epiphenomenon, that may occur in an acute inflammation of any mucous membrane.

Chronic, non-suppurative inflammation of the middle ear, and its treatment, occupy the next three chapters.

The above name is employed by the author to designate the affection of the middle ear more commonly known as chronic aural catarrh. He subdivides the disease into "catarrhal" and "proliferous." We do not see that the name is to be preferred to the old one, with the subdivisions of Von Tröltsch and Gruber.

Dr. Roosa was the first to call the attention of the profession to the injurious effects which sometimes occur from the use of the nasal douche, in treating ear-disease; and, although

various criticisms have appeared upon his published cases, we are inclined to think that his objections are well-founded, and fully confirmed by the observations of others.

This portion of the work includes all the later contributions to the treatment of this most intractable form of disease, including operations on the membrana tympani, which are treated of in a separate chapter.

The rest of this part of the work, Chapters XV. to XVII., discusses the subject of suppuration of the middle ear, and its results. To the general classification of polypi (that of Steudener) which he adopts, the author adds a fourth class of angioma, which, as occurring in the ear, was first described by Dr. A. H. Buck. The nature of aural polypi is illustrated by three drawings, made by Dr. H. C. Eno, of this city. Mastoid diseases, caries and necrosis, following protracted suppuration of the middle ear, are ably discussed, and the importance of free incisions and trephining, to give exit to accumulations of pus in the mastoid cells, urged.

In this chapter frequent reference is made to a paper on the subject, by Dr. A. H. Buck, which, by-the-way, is the best description of this class of affections in recent literature. A tabular statement of forty cases, showing the course and symptoms of cases of meningitis, abscess, and pyæmia, resulting from aural disease, closes this chapter (which is one of the most interesting in the book), and Part II. Part III., "The Internal Ear," consists of two chapters, one on anatomy, the other on diseases.

The small amount of space occupied by this part of the subject may fairly be taken as an index to the little which is known about it. Recent laborious researches of German anatomists have, indeed, done very much to increase our knowledge of its anatomy, but, how little do we really know of the pathological conditions! The anatomy of the internal ear, which occupies twenty-three pages, is compiled from Henle, and an article by Waldyer, in "Stricker's Hand-Book." Indeed, many of the sentences are given almost in the exact words of the authors from whom he quotes; but, here again care is taken, in a foot-note, to acknowledge their source.

Diseases of the internal ear are very briefly treated of. The author adopts Voltolini's view, that there is a primary

affection of the labyrinth that is sometimes mistaken for cerebro-spinal meningitis, a conclusion which we think erroneous. Knapp has shown that nearly all such cases of deafness occur in times of epidemic cerebro-spinal disease, and are associated with the chain of symptoms incident to it; that eye-disease (suppurative choroiditis), with complete loss of sight, remains after the meningitis; that the cases in which the eye or ear disease, or neither, occurs, show exactly the same symptoms; moreover, the eye and ear disease, as far as we know, are analogous. Why, after all this evidence that the deafness is caused by this disease, need we go out of our way to speak of a primary affection of the labyrinth which *may* be mistaken for cerebro-spinal meningitis. Part IV. consists of only one short chapter on deaf-mutism, which, with several very good chromo-lithographs of the membrana tympani, in health and disease, closes the volume.

There can be no doubt but that, by dint of industrious compilation, Dr. Roosa has made an excellent text-book, which will well answer the intention set forth in the preface, "to be a guide to those who wish to study diseases of the ear." The arrangement of the work is especially good, while the double index of subject-matter and authors renders it convenient for those who may use it for reference. Throughout the entire work a spirit of fairness is shown, and the most scrupulous pains taken to give proper credit to the authorities quoted.

A want of care is noticeable in the construction of many sentences, as in the one already referred to, where we are told to put an India-rubber air-bag into the patient's nostrils. The author is at times dramatic and highly graphic, as, for instance, when referring to the effects of repeated inflations of the *membrana tympani* (?), he says: "A membrane that has been thus treated becomes very flaccid, and flaps to and fro, at every swallowing motion, like the sign-board of a country inn on a windy day."

In several of the illustrations we have been unable to find in the plates the designating letters referred to in the text.

The illustrations are usually good, and the book well gotten up. In conclusion, we do not think it is too much praise to bestow, to say that this is the best text-book on diseases of the ear which has yet appeared in the English language.

ART. II.—*Treatise on the Diseases of the Eye, including the Anatomy of the Organ.* By Dr. CARL STELLWAG (Von Carion), Professor of Ophthalmology in the Imperial University of Vienna. Translated from the fourth German edition, by D. B. St. John Roosa, M. D., Chas. S. Bull, M. D., and Chas. E. Hackley, M. D. Illustrated by Wood Engravings and Chromo-lithographs, 8vo, pp. 915. New York: Wm. Wood & Co.

THE first translation of this work, from the third German edition, was given to the profession in 1868. The fact of its favorable reception is shown by the necessity for a new edition. As the new edition does not materially differ from the former one, it is not our purpose to review it in detail. It has, however, about one hundred and fifty pages of additional matter; and a third name, that of Dr. Bull, has been added to the list of translators.

As the preface truly remarks, "The industry and erudition of the distinguished author have allowed the translators a very small field for the introduction of new material."

The article on cataract has been enlarged by the description of two methods of extraction, i. e., "Streatfield's Peripheral Extraction" and "Liebreich's Corneal Extraction."

The translators have also added an appendix, in which the subject of the direct method of examining the fundus of the eye is discussed, with illustrations of Dr. Loring's ophthalmoscope and its adaptation to this method of examination. This method is now receiving a great deal of attention from specialists; and to Dr. Loring certainly belongs the merit of introducing a convenient instrument for this purpose. He has lately modified his instrument, so as to include a double row of lenses in the cylinder, which fits into the back of the mirror.

The index of subjects is made more complete, and the addition of an index of authors, which is not found in the German edition, adds greatly to facility of reference.

The book itself is a mine of scientific wealth, but, it must be admitted, one which is difficult to explore.

ART. III.—*Medical Lexicon; A Dictionary of Medical Science: containing a Concise Explanation of the Various Subjects and Terms of Anatomy, Physiology, Pathology, Hygiene, Therapeutics, Pharmacology, Pharmacy, Surgery, Medical Chemistry, Obstetrics, Medical Jurisprudence, and Dentistry; Notices of Climate and of Mineral Waters; Formulæ for Officinal, Empirical, and Dietetic Preparations; with the Accentuation and Etymology of the Terms, and the French and Other Synonymes.* By Robley Dunglison, M. D., late Professor of the Institutes of Medicine, etc., in Jefferson Medical College, Philadelphia. A new edition, enlarged and thoroughly revised. By Richard J. Dunglison, M. D. Philadelphia: Henry C. Lea, 1874.

WE are glad to see a new edition of this invaluable work, and to find that it has been so thoroughly revised and so greatly improved. The rapid advance of medical science, in all its branches, gives rise of necessity to many changes in its nomenclature, both by the addition of new words, and the modification of old ones. The present work includes more than six thousand subjects and terms not contained in the previous edition. The capacity of the page has been increased, and one hundred pages have been added. We notice, also, some considerable improvement in the typographical arrangement, facilitating reference and augmenting the usefulness of the volume. The distinguished author was occupied in this work up to the time of his death. Since then, it has been taken up and ably completed by Richard J. Dunglison, M. D., who has carried out, as far as possible, his father's plans and wishes. The dictionary, in its present form, is a medical library in itself, and one of which every physician should be possessed.

BOOKS AND PAMPHLETS RECEIVED.—*The Leprous Diseases of the Eye. With Six Colored Plates.* By Dr. O. B. Bull, Member of the Norwegian Medical Society; and Dr. G. A. Hansen, Physician to the Leprosy Hospital at Bergen. Christiania: Albert Cammermeyer, 1873. Pp. 27.

The Principles and Practice of Medical Jurisprudence. By Alfred S. Taylor, M. D., Lecturer on Medical Jurisprudence and Chemistry in Guy's

Hospital, etc., etc. Second edition, revised, with numerous Illustrations. In two large octavo volumes of over 1,400 pages. Philadelphia: Henry C. Lea, 1873.

Lectures on Bright's Disease; with Special Reference to Pathology, Diagnosis, and Treatment. By George Johnson, M. D., F. R. S., Professor of Medicine in King's College, etc., etc. New York: G. P. Putnam's Sons, 1874.

Elements of Physical Manipulation. By Edward C. Pickering, Thayer Professor of Physics in the Massachusetts Institute of Technology. New York: Hurd & Houghton. Cambridge: The Riverside Press, 1873.

Report of the Health Officer of the City and County of San Francisco, for the Fiscal Year ending June 30, 1873. Henry Gibbons, Jr., M. D., Health Officer. San Francisco: Spaulding & Barto, 1873.

On the Granular Cell found in Ovarian Fluid. By Thomas M. Drysdale, M. D., of Philadelphia. Taken from the Transactions of the American Medical Association. Philadelphia, 1873.

The Structure and Action of Striated Muscular Fibre. By Thomas Dwight, Jr., M. D., Professor of Anatomy at the Medical School of Maine.

Proceedings of the Nebraska State Medical Society, at its Fifth Annual Session, held in Nebraska City, June 14, 1873. Omaha, 1873. Pp. 55.

Proceedings of the Academy of Natural Sciences of Philadelphia. Part II. March to September, 1873, inclusive. Philadelphia, 1873.

Ninety-first Annual Catalogue of the Medical School (Boston) of Harvard University, 1873-'74. Cambridge: C. W. Sever, 1874.

Transactions of the State Medical Society of Michigan, for the Year 1873. Lansing: W. S. George & Co.

Reports on the Progress of Medicine.

SURGERY.

1.—*Cases of Colotomy.* [British Medical Journal, November 15, 1873.]

THE following paper was read by Christopher Heath, F. R. C. S., before the surgical section, at the last meeting of the British Medical Association:

Having had during the last three years occasion to perform the operation of colotomy in the left loin nine times, I wish to bring the particulars briefly before the members of the surgical section, being convinced that the operation is a most valuable one, and applicable with great advantage to many cases otherwise irremediable.

Of my nine cases, which all occurred in females, two operations were

undertaken for cancer of the rectum, causing obstruction, which had existed for many days before the patients came under my notice; both died. Three operations were performed for scirrhus in an earlier stage before obstruction had occurred, and of these one died and two recovered; one of these patients dying seven months afterward, and the other being about and well seven months after the operation. Two operations were performed for syphilitic ulceration and stricture; both recovered, and are alive now. One operation was performed as a last resource in a patient worn out with extensive fistulæ and ulceration (probably syphilitic) before she came under my notice, and proved fatal. One operation was performed for the relief of a recto-vesical fistula, and was perfectly successful. The result, therefore, was four deaths, and five immediate recoveries. (See Postscript.)

CASE I.—Sophia D., aged forty-nine, married twenty-six years, having had four children, was admitted into the Hospital for Women in January, 1871. For six months she had had constant inclination to go to stool, with little result; there was no blood passed, and no pain during the act. Three months before, she began to pass blood with great straining, and had been treated for piles. On admission, two inches up the rectum there was a ring of hard, irregular growths, admitting the point of the finger; the bowels had not acted for five days, but were relieved by an enema and medicine.

Colotomy was performed on January 28th, and the patient was discharged on February 25th. All difficulty of defecation was relieved by the operation; but the disease of the bowel made progress, and the patient eventually died on July 31st, after suffering great pain. The *post-mortem* examination showed a cancerous mass, occupying Douglas's pouch, involving the rectum, and firmly adherent to the uterus.

CASE II.—Sarah J., aged forty-two, married twenty-one years, had had three children and four abortions. She was admitted into the Hospital for Women on February 3, 1871, for obstruction of the bowels, which had existed for seven days, and was accompanied by stercoraceous vomiting. She had some months before been under treatment for scirrhus of the rectum, but had failed to attend. Colotomy was performed on the following morning, and the patient was relieved for the time, but gradually sank and died on the tenth day. At the *post-mortem* examination, the walls of the rectum were found infiltrated with cancer, and the passage almost completely closed.

CASE III.—This was a private patient, and her case has already been brought before the Clinical Society of London. She was brought to me by Dr. Grigg in January, 1872, suffering from the constant passage of fæces through the bladder, and occasional blocking of the urethra. Twelve years before, she had had a pelvic abscess on the left side after the birth of a dead child, and three years afterward she passed some membrane *per urethram*, since which time fæces had constantly passed with the urine, giving rise to very great and constant agony. The operation was performed on January 22, 1872, and the patient made a good recovery, being at once relieved from all inconvenience as regarded the bladder, and having but little trouble with the artificial opening. She is now alive and well, and able to go about as usual.

CASE IV.—Sarah Jane R., aged thirty-two, married twelve years, who had had four miscarriages, was admitted into the Hospital for Women on April 22, 1872, in a very feeble and emaciated condition, and with the perinæum riddled with fistulæ, through which fecal matter constantly oozed. There were also ulceration and stricture of the rectum, with a recto-vaginal fistula, due to the syphilitic ulceration, under which the patient had suffered for at least four years—i. e., since the last miscarriage. The

case was almost hopeless; but her only chance of life lay in relieving the constant irritation and suffering caused by the flow of feces, and I therefore recommended the operation of colotomy. This was done on April 27th, the patient being in a very exhausted condition, from which she never fully rallied, but died on the following morning. This patient had been, for six weeks before her admission, in another metropolitan hospital, where she had decidedly lost ground daily; but the question of operation does not appear to have been entertained.

CASE V.—Charlotte T., aged forty-nine, single, was admitted into the Hospital for Women on January 14, 1873, with an almost complete obstruction of the rectum by masses of scirrhus, one of which, of the size of a walnut, protruded through the anus. For nearly a year she had suffered from difficulty and pain about the rectum, and had passed blood. The nature and danger of the disease, and the relief to be gained by the operation, were fully explained to the patient, and colotomy was performed on January 18th, and at the same time the protruding cancerous mass was removed with the galvanic cautery. This latter proceeding was repeated on February 8th, with great relief, and the patient was discharged on March 11th. She has since that date attended as an out-patient, and is very comfortable, her only complaint being the discharge which exudes from the cancer in the bowel.

CASE VI.—Elizabeth F., aged sixty-four, married, but no family, had been an out-patient at the Hospital for Women since May, 1871, having a year before that time begun to suffer from pain in the rectum. Scirrhus was diagnosed, and she was relieved by palliative treatment; but the disease advanced so that complete obstruction became imminent, and she suffered considerable pain. Under these circumstances she was admitted into the hospital, and colotomy was performed on February 22, 1873. Some difficulty was experienced in reaching the bowel, owing to its undistended condition. The patient was very restless after the operation, and complained of a good deal of pain. In the evening, the abdomen was resonant and distended, but not painful. On the following day, the pulse was 120, temperature 102.6° , and the expression anxious. On the 24th, the pulse was 120, temperature 101° , and she was restless and excited, the abdomen being tense. On the 25th, she had a good night; pulse 116, temperature 101.2° . The abdomen had become less distended under assiduous poulticing, and feces had begun to pass by the wound. Toward evening, however, she was sick, the abdomen became rapidly distended, and she died at 10 P. M. The *post-mortem* examination showed peritonitis in the left loin, but no opening in the peritonæum or escape of fecal matter. In the rectum was a scirrhus mass of the size of a large orange, ulcerated at one or two spots on the mucous surface. The wound was healthy.

CASE VII.—Katie R., aged twenty-three, mother of two children, was admitted into the Hospital for Women in February, 1873, with syphilitic ulceration and stricture of the rectum, with profuse discharge. She was suffering from constant diarrhœa when admitted, and was in a very weak condition. Colotomy was performed on April 4th, and, it being impossible to keep the bowel distended, in reaching it I found that I had opened the peritonæum; I therefore put in extra silk sutures, so as to prevent fecal matter from becoming extravasated. The patient had some pain in and distention of the abdomen afterward, but no marked peritonitis. The relief from pain given by the operation was marked, though a good deal of discharge continued *per rectum* while she remained in the hospital. She was discharged on May 27th.

CASE VIII.—Louisa K., aged twenty-seven, was admitted into University College Hospital, for the second time, on May 31, 1873, with syphilitic ulceration and stricture of the rectum. She was constantly passing liquid

fæces, mixed with discharge, and experienced great pain, which disabled her from following her occupation as a needlewoman. Colotomy was performed on June 4th, the bowel being distended with warm water, and the patient made an uninterruptedly good recovery, being completely relieved from the pain, and almost entirely of the discharge.

CASE IX.—A married woman, aged fifty-one, was admitted into University College Hospital on July 4, 1873, with a history of three weeks' obstruction of the bowels, following upon difficulty in defecation of some months' duration. She had been under medical care, and various remedies had been tried, without relief. The abdomen was greatly distended, and the patient was in great suffering. *Per rectum* nothing could be discovered; but percussion showed the large intestine to be greatly distended with fecal matter. Colotomy was performed on the 5th without any difficulty, the distended colon being easily reached and opened, giving exit to a large quantity of liquid fæces. The patient was relieved, but never rallied thoroughly, and died exhausted fourteen hours after the operation. At the *post-mortem* examination, the upper part of the rectum was found completely obstructed by a cancerous structure. The wound was healthy; but it was found, on opening the bowel, that the reflexion of peritonæum had just been divided, making a clean-cut opening of one-eighth of an inch. There was no evidence whatever of peritonitis, and death must be attributed rather to shock and exhaustion.

The preceding cases illustrate some of the affections for which, in my opinion, the operation of colotomy is both necessary and advisable. When performed in proper time, before the patient has become exhausted by pain or obstruction, the operation is a fairly successful one, the immediate risk being small. The operation is by no means difficult in the majority of instances; and though it may be occasionally impossible to avoid opening the peritonæum, that accident is not necessarily fatal. The operation is distinctly curative in the frequent cases of syphilitic ulceration of the rectum, and prolongs life in comfort, in cases of cancerous disease, by preventing the occurrence of obstruction.

POSTSCRIPT.—Since this paper was written, I have had two other successful cases: one operated on at the Hospital for Women, in the presence of several members of the Association, on August 8th, for syphilitic disease of the bowel; and the other at University College Hospital, for cancer. I have, therefore, had eleven cases, with four deaths, and seven immediate recoveries.

2.—*A New Method of Operating for Stone in the Bladder.* [British Medical Times and Gazette, November 15, 1873.]

Mr. Gutteridge, of Birmingham, has lately been operating for stone, before the surgeons of London, by a method for which he claims several advantages.

Mr. Gutteridge's scheme consists of two parts, viz.: to use his own words, "of a due combination of incisions of parts ascertained by extended experience to be capable of being safely severed; and of implements with which the successive stages may be most surely and with least danger accomplished." The patient was a boy sixteen years of age, a native of the Black Country, and was submitted to operation without being anæsthetized, as Mr. Gutteridge has a strong objection to chloroform or ether in lithotomy. Kneeling before the patient when in the lithotomy-position, and with his eye thus in a line with the perinæum, the operator first passed the staff, which he handed to his assistant; he then made very firm pressure with the fingers of his left hand upon the anus, thus dragging the skin of the left side of the perinæum, with the lower extremity of the gut, well

over toward the right tuber ischii. He next rapidly plunged the scalpel into the groove of the staff at a point a little to the left of the rashe, and on a level with the anterior extremity of the tuber ischii, and then, without running the scalpel along the groove, he made it cut its way through the soft tissues. Next he passed the beak of the cystotome into the roughened groove, and, with the cutting-edge directed a little upward from the horizontal direction, he passed it onward through the prostate and then turned the edge downward and brought it out at the lower extremity of the skin-wound. This done, he passed his left index-finger into the bladder, felt the stone, then withdrew the staff, and passed in along the finger a grooved conductor, much like a narrow blunt-gorget, and along this, after withdrawing the finger, he guided the forceps, only one blade of which was in the groove of the conductor. The stone was seized and at once withdrawn, and the operation thus completed.

It will be understood from this account that the method differs from that adopted by other surgeons in that: (1) no anæsthetic is administered; (2) that in dividing the structures in the ischio-rectal fossa the scalpel is thrust by one plunge into the groove of the staff at the point of the anterior extremity of the wound, and that, owing to the traction made on the anus, the incision through the skin, when the parts are relaxed, is seen to extend over the tuber ischii; (3) that the incision whereby the bladder is opened is semilunar in shape, and describes a curve constituting an arc (as Mr. Gutteridge states it) of one hundred degrees of a circle; (4) that the forceps are guided into the bladder along a grooved director instead of along the left index-finger. Mr. Gutteridge spares, if possible, the membranous portion of the urethra, and lays open only the prostatic part. His aim is to make his knife enter the canal at the apex of the prostate gland.

For these modifications in the procedure special instruments are provided. These were recently shown to members of the British Medical Association, at the forty-first annual meeting, in August last, a description of which Mr. Gutteridge has himself given as follows: "A table constituted of a fixed frame, on which is a sliding top, whereby the patient may be firmly fixed and kept symmetrically in all respects, and yet through which, by means of a simple screw-action, the position of *tight-up trussing* may be speedily relaxed, and the pressure on the respiratory and venous systems lightened, so that in a protracted operation rest may be given and renewed efforts made, by intervals, at the operator's pleasure—a resource in the aged and the fat of the very first importance as respects the sustaining the patient's power of endurance without fatal congestion. The manual instruments consist, first of a staff, with handle capable of being used by the operator and the assistant at the same instant of time, and with a furrow for the knife to traverse, coiling slightly, and ruffled so that the holder of the knife may have a positive assurance of the knife and staff being in real contact throughout the course of the knife, until it is entered into the bladder. Secondly, an implement consisting of a handle shaped for the finger and thumb, with scalpel mounted at one end; and at the other a beaked knife—properly a cystotome—fixed at a right angle to the scalpel on the axis of the haft, so that one instrument may effect, by a move of the finger and thumb, the two distinct incisions, the external one and that of the prostate. Thirdly, a conductor for the forceps conformable in respect of size to the operator's left fore-finger. Fourthly, forceps with supplementary handles by which the stone may be compressed with hair-light pressure while increased force is brought to bear on the main arms of the forceps; admitting of the separation of the process of compression and traction; as well as relaxation of the hold of the stone, for the purpose of adjustment of the forceps to the stone, or gentleness of pinch, in case of the stone being of friable material."

The operation for stone performed with these instruments and in this way Mr. Gutteridge would desire to have known as "lithotomy made speedy and safe." Certainly in his own hands, when performed as we saw it, it is rightly so styled. It was done in a remarkably short time—less than half a minute—and every step in the operation was executed with rapidity and precision. The boy has gone on perfectly well since the operation, and within forty-eight hours afterward the urine was all voided by the natural passage. This, as is well known, is an unusually short time between the operation and the safety of the patient, which is secured by the flow of urine along the urethra. Yesterday, the eleventh day after the operation, the patient returned to his home in Staffordshire, perfectly cured. Mr. Gutteridge has performed lithotomy one hundred and eighty-eight times, with a loss of only eight cases.

3.—*Successful Case of Abdominal Section for Intussusception.* [Medical Times and Gazette, November 29, 1873.]

At a meeting of the Royal Medical and Chirurgical Society, held November 11th, Mr. Jonathan Hutchinson narrated the particulars of a successful case in which he had opened the abdomen for the relief of intussusception. The patient was a child aged two years. The intussusception had commenced at the cæcum, and was of such length that its extremity, presenting the inverted ileo-cæcal valve, was extruded several inches at the child's anus. The condition had been one month in course of development; latterly the case had been treated as one of prolapsus, and attempts had been made to keep the bowel in place by means of a cork pad. The child was very ill, and the author, having failed in attempts to effect reduction by enemata, etc., and having had experience of several similar cases which had ended fatally, determined to operate. The child was put under chloroform, and the abdomen was opened in the middle line, below the umbilicus. The intussusception was then easily found, and as easily reduced. The after-treatment consisted only in the administration of a few mild opiates, and the child made a rapid recovery. The author next narrated briefly the particulars of three somewhat similar cases in which he had been consulted, and in which the intussuscepted bowel could be easily felt by the finger in the rectum. In all three, in spite of persevering treatment by injections, bougies, etc., the patients had died unrelieved. Without attempting any thing like a statistical analysis of recorded cases, the author appended to his paper, in tabular form, the notes of a very considerable number of cases bearing upon the diagnosis and treatment of similar lesions. From the consideration of these, the following conclusions were suggested: 1. That it is by no means very uncommon for intussusception to begin at the ileo-cæcal valve, and to progress to such a length that the invaginated part is within reach from the anal orifice, or even extruded. 2. That it is of great importance, in all cases of suspected intussusception, to examine carefully by the anus. 3. That in almost all cases of intussusception in children, and probably in most of those in adults, the diagnosis may be made certain by handling the invaginated part through the abdominal wall. 4. That the prognosis of cases of intussusception varies much: first, in ratio with the age of the patient; and, secondly, with the tightness of the constriction. 5. That in a large proportion of the cases in which children under one year are the patients, death must be expected within from one to four or six days from the commencement. 6. That in the fatal cases death is usually caused by shock, or by collapse from irritation, and not by peritonitis. 7. That in many cases it is easy, by estimating the severity of the symptoms (vomiting, constipation, etc.), to form an opinion as to whether the intestine is strangulated or simply irreducible. 8. That in

cases of strangulated intussusception, while there is great risk of speedy death, there is also some hope that gangrene may be produced, and spontaneous cure result. 9. That in cases in which the intussuscepted part is incarcerated and not strangulated, there is very little hope of the occurrence of gangrene, and it is probable that the patient will, after some weeks or months, die, worn out by irritation and pain. 10. That the chances of successful treatment, whether by the use of bougies or by the injection of air or water, are exceedingly small, excepting in quite recent cases, and that, if the surgeon does not succeed by them promptly, it is not likely that he will succeed at all. 11. That the cases best suited for operation are those which have persisted for some considerable time, and in which the intestine is only incarcerated; and that these cases are also precisely those least likely to be relieved by any other method. 12. That in the cases just referred to, after failure by injections, bougies, etc., an operation is to be strongly recommended. 13. That the records of *post mortems* justify the belief that, in a considerable number of the cases referred to, the surgeon will encounter no material difficulty after opening the abdomen. 14. That the circumstances which might cause difficulty are: (1) the tightness of the impaction of the parts; (2) the existence of adhesions; and (3) the presence of gangrene. 15. That, in selecting cases suitable for operation, the surgeon should be guided by the severity of the symptoms to an estimate of the tightness of the strangulation, and as to the probability of gangrene having already set in. 16. That in cases in which the patient's symptoms are very severe, or the stage greatly advanced, it may be wiser to decline the operation, and trust to the use of opiates. 17. That the operation is best performed by an incision in the median line below the umbilicus. 18. That in cases of intussusception in young infants (under one year of age) the prognosis is very desperate, scarcely any recovering excepting the few in whom injection-treatment is immediately successful, while a large majority die very quickly. 19. That the fact just mentioned may be held to justify, in the case of young infants, very early resort to the operation. 20. That it is very desirable that all who, in the future, have the opportunity for *post-mortem* examination of intussusception cases should give special attention to the question as to whether an operation would have been practicable, and should record their results.

Translations.

The Origin of Epithelial Cancer, and the Regeneration of Epithelium.—Dr. Vajda, in Vienna (*Centralblatt*, 1873, p. 385), has obtained the following results: 1. The presence of a physiological vascular system, very often of the finest calibre, always underlies the formation of epithelial cancers; its connection with epithelial neoplasms is so intimate that the newly-formed epithelial elements have the relation to the cells in the wall of the vessel (vascular cells) of product and producer. 2. The vascular system, situated below the boundary of physiological epithelium, next takes part in the formation of epithe

lial cancer. Its share consists in the formation, in the vascular cells, of endogenous cells. Around the new cell, photo-, or rather deuteroplasma now accumulates. 3. The new epithelial cells, thus formed, usually remain in contact with their vessels for a time, or perhaps, only in contiguity, their position to the vessels being at first usually only tangential, but later more vertical. 4. Provided the new cell is not placed in a situation favorable to its further development, which occurs when large numbers of them remain in contact for a long time, a regressive metamorphosis, corresponding to its physiological basis, sets in. The regressive metamorphoses comprise mucous degeneration (cancers of the mucous membranes), fatty degeneration (cancers of the lips and labiæ), horny transformations of the new-formed elements (cancers of the penis or lid). After the fatty degeneration, an unexpected vascular net-work, now without function, often appears; or, in the case of larger vessels, the primary vessel is found surrounded by a reticular net-work, without nuclei, and without life. 5. At the same time, clinical observations teach us that numerous pale, very active cellular elements are found in the degenerated cancers, which, by means of increased temperature, throw out and withdraw prolongations, without manifesting any change of place. 6. The epithelial neoplasms show a tendency to spread in those situations where the vessel from which they originate is placed in loose tissue or when the connective tissue surrounding it is made lax by a previous inflammation. Upon the basis of these observations, the author assumes that the generation of epithelial cells always proceeds directly from the vessels. The comparative examination of physiological tissues showed that, also in the regeneration of physiological epithelial cells, there is a direct causal connection between vessel and epithelium. E. F.

Phonometric Examination of the Chest and Abdomen.—To ascertain the diagnostic value of this method, as first proposed by Dr. Baas, Dr. P. Guttmann (*Berl. Klin. Wochenschrift*, 1873, No. 7) has subjected it to a closer examination. The method consists in the application of a vibrating tuning-fork to different portions of the thorax and abdomen, the strength of

the tone indicating the density of the underlying tissues. Guttman used a tuning-fork, the tone of which corresponded to A, but could be raised to D. The method was used in different diseases, condensation of the lung, cavities in the lung, pneumonia, pleuritic exudation, pulmonary emphysema, dilatation of the heart, hypertrophy of the liver, etc. The results of these examinations, which were compared with those of percussion, are summarized as follows: 1. Phonometry is a method which occupies more time than percussion. 2. In regard to the acuteness of acoustic differences, by which the demarcation of solid and hollow organs is made possible, phonometry does not equal percussion. 3. It lies in the nature of the phonometric method to indicate, by the strength of tone, the quantity of air corresponding to dullness and resonance in percussion. Phonometry, however, gives no information concerning the diffusion of air, tension of the pulmonary parenchyma, absence of pathological cavities in the lung; in short, concerning those physical relations in the respiratory apparatus which are disclosed to us by the pitch of percussion-sound, by tympanitic resonance, and the changes in resonance obtained by opening and closure of the mouth. The increased feeling of resistance, by which organs devoid of air are instantly revealed, is but slightly marked in the phonometric method. 4. Phonometry is of little use in abdominal examination, except for the demarcation of the boundaries of the liver and spleen; in the case of gross pathological conditions, as abundant peritoneal exudation, tumors, etc., palpation and percussion give more exact results.—*Vierteljahrschr. für prakt. Heilkunde*, iv., 1873.

E. F.

Subcutaneous Injection of Extract of Ergot, in Fibro-myoma of the Uterus.—Prof. Hielbrandt ("Schmidt's Jahrb.," Bd. 156) injected ergot subcutaneously, in the case of a woman, thirty-three years of age, who suffered from menorrhagia, fluor albus, and occasional pains. Three years before, she observed a tumor in the hypogastric region, which was diagnosed as intra-uterine fibroma. The tumor had the size of a uterus in the seventh month of pregnancy. All means for checking the hæmorrhage having failed, and the tumor retaining the same

size after one year, a syringeful of a solution of ergotine (3.0 ad glycerine et aq. dest. āā 7.5 gramm.) was daily injected for two weeks. The next menstruation was less painful, and the quantity diminished. The tumor diminished, from week to week, and had disappeared within fifteen weeks. Menstruation, however, had returned in the same degree as before the disappearance of the tumor. In eight other cases, Hielbrandt observed the same result; his explanation is, that the ergotine causes diminished nutrition of the tumor, by giving rise to a convulsive condition of the vessels supplying the tumor, also by the compression exerted by the contracting walls of the uterus; general fatty degeneration and resorption, therefore, result. Intra-uterine tumors are, hence, more easily removed than sub-peritoneal, by means of this injection. These injections are less painful than with the solutions of Langenbeck, and are to be made in the umbilical region or the hips.

E. F.

Transmissibility of Tuberculosis.—Prof. Klebs has obtained the following results: 1. The milk of tuberculous cows gives rise to tuberculosis in different animals. 2. This form usually begins with intestinal catarrh, then causes tuberculous affection of the mesenteric glands (scrofula), then hepatic and splenic tuberculosis, and, finally, diffuse miliary tuberculosis of the thoracic organs. 3. Thus, it takes the same course which is followed in human scrofula and secondary tuberculosis. 4. Tuberculous affection, through milk, can be overpowered by a strong organism, in the same manner as tubercle can be resorbed, or can cicatrize. 5. Tuberculous virus is present in the milk, perhaps in variable quantity, of cows more or less extensively affected. (It is probable that scrofula is thus transmitted to healthy children, through the milk of tuberculous mothers or nurses.) 6. The same virus is present in the milk-serum in solution, for milk deprived of its solid matters caused infection in the animals experimented on. 7. It is probably not destroyed by the common, not very careful process of boiling. —*Archiv d. Heilkunde*, iv., 1873.

E. F.

The Relation of Carbonate of Ammonia to Uræmia.—On this subject, Prof. S. Rosenstein, in Gröningen (“Virch. Archiv.”

Bd. 65), has instituted experiments, the results of which he summarizes as follows: Carbonate of ammonia, introduced into the blood in sufficient quantity, can call forth a complexity of symptoms which are analogous to those of epilepsy and the group of symptoms which are observed in cases of uræmia. The convulsions produced by the ammonia are undoubtedly cerebral in their nature, and cannot be called forth after section of the brain from the spinal cord. They are, most probably, the effect of a direct influence of this poison on the nervous substance of the cerebrum; at least, they are certainly not of a reflex character by means of the cervical sympathetic or the vagi. Preceding narcosis, from morphine, chloroform, or hydrate of chloral, exerts no influence on the occurrence of the convulsions. Smooth muscular fibre is not affected by the convulsions, for they were not observed in the intestine or the uterus. In pregnant animals, no abortion occurred, nor were the lives of the young imperiled. All toxic symptoms from carbonate of ammonia are transitory, provided the kidneys, which are the chief organs by which it is eliminated, are intact. Elimination of the poison by the pulmonary mucous membrane occurs only in small quantity. Even by exclusion of the renal function, the symptoms may pass over. It remains undecided whether in these cases vicarious elimination by the skin, or a transformation of the ammonia into nitrates in the blood, takes place. In rare cases, paraplegia of the lower extremities, also of central origin, occurs among the toxic effects of ammonia. The chief distinction between the effect of carbonate of ammonia and that agent which causes uræmia, is that the former always calls forth one and the same complexity of symptoms, those of epilepsy, while the latter produces not only epilepsy, but also coma, convulsions, and delirium. But, also in those cases in which the uræmic phenomena resemble those of ammonia-poisoning in the epileptic form, a connection between the two is not feasible, as the same phenomena are observed in man, though the blood contains no ammonia, and because in experiments on animals there is no relation between the intensity of the uræmic phenomena and the quantity of ammonia found. In regard to uterine eclampsia, it is to be noted that narcotics, the use of which is undoubtedly

of benefit, does not prevent the occurrence of cerebral convulsions, when due to ammonia-poisoning. In conclusion, the author believes that those nervous symptoms, which so frequently occur as the *finale* of chronic, vesical, and prostatic disease, and to which Jaksh has given the name of "ammoniamia," have nothing in common with the effects which follow intoxication by carbonate of ammonia; that this name should be abandoned, as it is founded on an entirely false theory, for the only certain effect of ammonia-poisoning, the epileptic convulsions, is almost entirely wanting in the so-called "ammoniamia."—*Vierteljahrschr. f. prakt. Heilk.*, 118, 119, 1873.

Discharge of Biliary Calculi by an Abdominal Fistula.—

The discharge of biliary calculi, by an abscess and a fistula in the abdominal parietes, is mentioned in all works on pathology as one of the terminations of biliary lithiasis, but is such a rare occurrence that the report of a case occurring in the practice of Dr. Beck, of Rastadt, will be interesting. The patient affected was a female, forty-five years of age, who for several years had suffered with hepatic colic, and after several months, during which the pains were much augmented, discovered a tumor, situated three fingers under the umbilicus, which, after an attack of rigors and fever, opened, giving exit to a small quantity of muco-purulent matter. The pains did not diminish after the opening of the abscess, and Dr. Beck probed the fistula, and discovered the presence of a hard and immovable body. After dilating the opening with prepared sponge, a biliary calculus was extracted with a fine pair of forceps. During the succeeding eight months, this calculus was followed by ten others, and, during the following year, eight other calculi were discharged by the same opening. At the end of two years, the wound cicatrized, and during this period no fresh attacks of hepatic colic occurred.—*Revue de Thérap. Méd. Chir.* and *Lyon Medicale*, April 1, 1873.

Miscellany.

Appointments, Honors, etc.—Surgeon-General Barnes, of the United States Army, has been elected a corresponding member of the Academy of Medicine of France, by a vote of forty-two out forty-six. The Board of Charities and Correction of this city have appointed Drs. Charles T. Poore, Clement Cleveland, and Frederick R. S. Drake, Visiting Physicians to Charity Hospital, to fill the positions made vacant by the resignation of Drs. Lewis A. Sayre, Alfred S. Loomis, and James R. Wood. Dr. Herman Knapp has been appointed Visiting Physician to Charity Hospital, in place of Dr. Henry D. Noyes, resigned. W. E. Boardman, M. D., and E. W. Aiken, M. D., have been appointed physicians to the newly-instituted out-patient department of the Boston City Hospital for the Treatment of the Diseases of Women. Dr. William M. Polk has been appointed Visiting Physician to Bellevue Hospital, in place of Dr. Macready, resigned. Dr. Evory Kennedy has been elected President of the Dublin Obstetrical Society for the coming year. Dr. J. Matthews Duncan has been elected President of the Edinburgh Obstetrical Society. Dr. Lyon Playfair has been unanimously reelected as member for the Universities of Edinburgh and St. Andrews. The chair of Embryogeny at the Collège de France, rendered vacant by the death of Coste, will shortly be filled. There are three candidates of great merit who aspire to be Coste's successor. One, M. Gerbe, was his assistant and coöperator for several years; another, M. Dareste, of Lille, is well known by his remarkable researches on experimental teratology, which he has been conducting for the last twenty years; the third, M. Balbiani, is at present at the head of the histological department of Claude Bernard's laboratory of general physiology at the Museum of Natural History.

Resolutions on the Death of Jonas P. Loines, M. D.—At the stated meeting of the New York Medico-Legal Society, held December 26th, at the College of Physicians and Surgeons, the special committee appointed to draft appropriate resolu-

tions relative to the death of our late fellow-member, Jonas P. Loines, M. D., through R. J. O'Sullivan, M. D., reported as follows:

Whereas, The New York Medico-Legal Society has learned with profound regret of the death of an esteemed member, Jonas P. Loines, M. D., and, while yielding due reverence to the will of the Almighty, we desire to place on record a tribute of respect to the memory of our deceased brother: therefore, be it

Resolved, That in his eminent abilities as a scientific investigator we recognize the qualities that constitute a physician whose devotion to the discharge of his duties endeared him to all who knew him, and entitled him to the respect and affectionate remembrance of his associates.

Resolved, That these resolutions be entered in full upon the minutes, and that a duly-authenticated copy of the same be transmitted to the family of the deceased.

Respectfully submitted:

(Signed)

RICHARD J. O'SULLIVAN, M. D.,
THOMAS C. FINNELL, M. D.

December 26, 1873.

Prof. Lewis A. Sayre, M. D., moved to amend the same by adding "and be published in the various medical journals."

Dr. Thomas C. Finnell, in moving the adoption of the resolutions, said:

"Mr. President, I have known Dr. Loines for twenty-five years, and he was an honor and a credit to the medical profession. His whole soul seemed to be devoted to the subject of vaccination and revaccination; and there is no member of the profession here but knows his worth and value, and what he has done in that respect.

"I hope, sir, that these resolutions will be carried out completely and thoroughly; and I move their unanimous adoption."

The resolutions, as amended, were unanimously adopted.

(Attest)

GEORGE W. WELLS, M. D.,
Recording Secretary.

A Memorial to Medical Heroes.—A Convention of Physicians has been held in Memphis, for the purpose of taking measures to perpetuate the memory of the seven members of the profession who perished in that city while in the discharge of their duties during the late visitation of yellow fever. A circular

has been issued asking for contributions to a fund for the erection of a suitable monument, to be inscribed with the names of Drs. Williams, Freeman, Crone, Hatch, Kennon, Blount, and Minor, victims to the pestilence, of whom the committee says: "Their fame, the story of their heroism, belongs to the medical world, and our brethren throughout the broad land are respectfully requested to contribute something to this laudable end."

Remittances may be made to either member of the committee, Richard H. Taylor, M. D., 44 North Court Street, F. L. Sim, M. D., 115½ Beale Street, or R. W. Mitchell, M. D., 275 Main Street, all of Memphis, Tennessee; or to the editor of the *NEW YORK MEDICAL JOURNAL*. We trust the appeal will be liberally responded to by members of the profession in all sections of the country, for noble deeds belong to all.

New York Society for the Relief of Widows and Orphans of Medical Men.—At the thirty-first annual meeting of this Society, held November 26, 1873, elections were held to fill vacancies, and the following are now the officers of the organization:

President, John O. Stone, M. D.; Vice-Presidents, John R. Van Kleeck, M. D., Samuel T. Hubbard, M. D., John G. Adams, M. D.; Treasurer, J. W. G. Clements, M. D.; Secretary, Gouverneur M. Smith, M. D.

Managers: Term (1874, '75, '76), O. White, I. E. Taylor, E. Krackowizer, C. D. Smith, E. Delafield, R. Watts, R. A. Barry, Term (1873, '74, '75), Jared Linsly, J. O. Smith, Edw. L. Beadle, Gouverneur M. Smith, Joel Foster, Thos. F. Cock; Term (1872, '73, '74), Willard Parker, Jas. Anderson, Gurdon Buck, J. L. Banks, Jas. H. Anderson, William Detmold, Wm. C. Roberts.

The total assets of the Society amount to \$98,911.16. Balance in treasury, \$283.15. The members now number 129. Aid is extended to seven widows and six children of deceased members.

Medical Charts of the United States.—We have recently had an opportunity of inspecting a series of Medical Charts of the United States, prepared by Dr. S. H. Carney, from information furnished by the highest medical authorities in each State.

In most cases, to insure accuracy and completeness, several letters of information have been obtained from each county.

Dr. Carney has been interested for a number of years in the study of sanitary science, as applied to the important question of life-insurance. He is now identified with the New York Life Insurance Company, at whose office the charts referred to may be seen. The set consists of five maps, each nearly seven feet in length. The prevalence of each disease is represented by different shades of a given color. Red has been chosen for phthisis, brown for pneumonia, purple for rheumatism, blue for malarial diseases, and green for typhoid. The idea of thus rendering visible, at a glance, the prominent medical features of an entire continent, is at once bold and original, and we hope the work will be published for the benefit of the profession, to whom it will prove of great interest and value.

The Value of Pepsin.—In the *Boston Medical and Surgical Journal*, of January 1st, Dr. R. T. Edes describes some careful experiments with the various kinds of pepsin, from which he arrives at the following conclusions :

Much of the dissatisfaction with pepsin expressed by physicians is due to the use of preparations which contain little or none of it.

The pepsin made by Scheffer's process is by far superior to any other in ordinary use.

The wine is feeble, but not necessarily inert.

Elixirs of pepsin and bismuth are humbugs.

Pepsin should be administered with an acid, and with as few drugs as possible. A small amount of alcohol is not inadmissible, but a large amount retards digestion.

Its beneficial action is *not limited* by the amount of albumen which it dissolves in a test-tube without change or renewal of any of the contents.

Massage.—In the *Medical Record*, of January 1st, there will be found an interesting paper, by Dr. W. R. Fisher, giving the substance of nearly all that has been written on the subject of massage, or passive manipulation with the fin-

gers or hands, and the method of employing it for the cure of various forms of synovitis, and other diseases. To Dr. Mezger, a Dutch physician practising in Bonn, the credit is due of reducing this plan of treatment to a system, and so regulating its use as to avoid danger, and insure the greatest amount of benefit it can afford. Properly employed, this remedy promises valuable results in a large class of cases. An excellent illustration of what may be accomplished by patient and careful manipulation is afforded by the result of the case of a sprained ankle, reported by Dr. Fisher in the last number of this JOURNAL.

Homœopathy in the University of Michigan.—The Circuit Court of Washtenaw County, Mich. (in which the university is situated), have refused to issue a mandamus compelling the Regents to appoint two professors of homœopathy in the medical department, in accordance with the law passed by the State Legislature at its last session. This decision probably disposes of this perplexing question, inasmuch as the Supreme Court had previously made a similar denial, and these two preliminary rulings would seem to foreshadow the ruling when the question comes up for final adjudication on full argument. It will be remembered that the Regents have twice expressed their willingness to take charge of an independent school of homœopathy, provided the necessary funds be furnished, but that they have always been averse to combining the two systems in one school.

A New Hospital.—The Metropolitan Throat Hospital, No. 7 Stuyvesant Place, near the Cooper Institute, has recently been organized and incorporated, with the following list of officers:

Medical Staff: Clinton Wagner, M. D., Morris J. Asch, M. D., George M. Lefferts, M. D.

Pathologist, Edward B. Bronson, M. D.

Consulting Physicians and Surgeons: J. J. Crane, M. D., J. Marion Sims, M. D., William A. Hammond, M. D., J. R. Wood, M. D., Max Herzog, M. D.

Medical Superintendent, Clinton Wagner, M. D.

The Dispensary Department will be open daily from 2 till 4 P. M. Physicians interested in diseases of the throat are cordially invited to attend the clinics.

Fatal Case of Poisoning by Coal-Gas.—The *Medical Times and Gazette* reports the death of a woman in Bristol, in consequence of sleeping in an unventilated room nine feet square, containing a gas-stove, and one gas-jet for lighting purposes, which had both been in use all night. Gas-stoves unprovided with chimneys are exceedingly dangerous, and must be always prejudicial to health, even in large apartments. We are surprised to see so many of them in use in this city, and deem it a proof of gross ignorance of the requirements of hygiene. Every gas-stove should be provided with an escape-pipe to carry off the products of combustion. The same is, of course, true of all gas-burners, though the evil is less in proportion to the smaller quantity of gas consumed.

The District Medical Society of the County of Hudson, N. J.—The officers chosen for the ensuing year are:

President, J. D. McGill, M. D.; Vice-President, H. H. Abernethy, M. D.; Secretary, J. T. Field, M. D.; Treasurer, L. A. McBride, M. D.; Reporter: T. R. Varick, M. D.

Delegates to New-Jersey Medical Society: Drs. Payn, Chabert, Watson, Culver, Benson, Field, McGill, and Abernethy.

Alternates: Drs. Miller, McBride, Bock, Gilman, Finn, McLaughlin, Talson, and Rau.

Committee on Ethics: Drs. Chabert, Miller, Watson, Field, Benson, and Culver.

Effects of the London Fog.—The unusual density and duration of the recent fogs in London were exceedingly disastrous causing the death of many persons affected with cardiac and respiratory diseases, and greatly augmenting the death-rate. There were altogether about fifty patients taken to the various hospitals on account of accidents due to the fog. The number of deaths from diseases of the heart and lungs was 764 the week of the fog, and only 560 the previous week.

Naturalization of the Eucalyptus.—At a late meeting of the Royal Botanic Society, of London, it was stated that several specimens of the *Eucalyptus globulus* were growing in the new greenhouse of medicinal plants in the Society's garden in the Regent's Park, one being fifteen feet in height. Experiments are being made to test the hardiness of the plant in the open air. In view of the wonderful properties claimed for this tree—counteracting or modifying malarial poison—its growth should be made the subject of experiment in many parts of this country, besides California.

Medical Library and Journal Association of New York.—The annual meeting of this Association was held December 2, 1873, when the following gentlemen were elected officers:

President, Dr. John C. Peters; 1st Vice-President, Dr. A. Jacobi; 2d Vice-President, Dr. H. P. Farnham; Recording Secretary, Dr. A. H. Smith; Corresponding Secretary, Dr. George Bayles; Treasurer, Dr. J. H. Emerson; Librarian, Dr. A. E. M. Purdy.

As Trustees for three years: Drs. J. H. Leaming, F. A. Burrall, J. S. Banks, Ellsworth Eliot, T. M. Cheesman.

A New Surgical Instrument.—Dr. Aveling exhibited, at a recent meeting of the London Obstetrical Society, a new form of chain-saw for the removal of tumors, etc., in cases where it is difficult to include the parts in a loop or *écraseur*. It consists of two tubes, united by a hinge at the handle, through which a chain or fine saw passes, which, being drawn to and fro, cuts, as we understand it, in a direction *from* the instrument, being pressed against the part to be removed.

Female Medical Students.—The managers of the Edinburgh Infirmary have decided not to admit women students to the operating theatre with the male students. It is reported that thirty of the Russian women who were attending the medical lectures at the University of Zurich, and were expelled on demand of the Russian Government, have obtained permission from the French Government to continue their studies at the School of Paris.

The Army Medical Grievance.--We publish, under its appropriate heading, the action taken by the Academy of Medicine of New York, in regard to the repeal of the obnoxious law as to rank and pay of medical officers in the United States Army. The Academy simply indorsed the memorial to Congress presented by the American Medical Association. Similar action on the part of every medical organization in the country would be eminently proper, and would constitute an emphatic and unanimous expression of opinion in a matter affecting very deeply the honor and interests of the profession.

Editorial Changes.--Dr. Edward B. Stevens has resigned the editorship of the Cincinnati *Lancet and Observer*, and is succeeded by Dr. J. C. Culbertson, who has, we understand, purchased the journal. Dr. Robert Battey has been appointed editor of the Atlanta *Medical and Surgical Journal*.

A New Society.--The New York Society of Neurology and Electrology was organized December 15th, and Dr. Meredith Clymer elected president. We shall give in our next issue the names of the other officers of the Society, and some account of the important work that has been undertaken.

The British Pharmacopœia.--A new edition of this work is soon to be published, and with it an addendum, treating of new medicines. The addendum is, we believe, to be issued separately.

Obituary.

ALFRED UNDERHILL, M. D.--The family has been distinguished in the State for generations. Captain John Underhill, later of Pequot-Fort celebrity, came over the seas with the colony under Winthrop, 1630. In him the American branch was founded.

Dr. UNDERHILL, born in New York, 1808, was graduated from Columbia College, and in due course of time from the College of Physicians and Surgeons. Early resolved on medicine for his profession, he entered upon and prosecuted the

practice with an assiduous zeal. Born to the inheritance of a robust constitution, for which he had suitably cared, he nevertheless had to succumb eventually to a complication of formidable organic derangements.

The habitual life of our friend was marked less by events than by its uniform usefulness. Devoted to obstetrics as a specialty, he had made large aggregations of experimental knowledge in this department, as many a grateful mother among his survivors must feel. Nor did he lose sight withal of the church of his forefathers, having been attached, in the capacity of attending physician, to the Orphan Asylum, the Infant Asylum, and the Old Ladies' Home (and to one of them for ten years consecutively)—institutions all under the fostering care of "Old Trinity," their almoner. Not soon will the chasms made in these organizations by his demise be thoroughly bridged over.

The doctor wrote well, though little, as evinced in a thesis of his before the Academy, delivered in 1870, which bears this title: "The Symptoms and Signs of Pregnancy in their Diagnostic Relations." His *forte* lay along the administrative line. In coöperation with the late Dr. Bulkley and others, as also afterward during his double 'presidential term, he wrought faithfully in recovering the County Society from its long lethargic sleep, and in restoring it to its pristine foremost place among the sister conventions.

Dr. Underhill was genial in temper, generous and unsuspecting rather than impulsive and impetuous, of a most bland address, and of a countenance ever radiant with unclouded sunshine, deferential to his equals, and considerate toward all. He was habitually solicitous to anticipate the wants of any brother, while none in personal demeanor better sustained the dignity of the relation.

Happy in his domestic associations, at ease in his social position, he had lived long enough to estimate both wealth and fame at their true relative value, and to appreciate a "good name" as transcending all. Well might the good physician, the worthy citizen, and the exemplary Christian, await the final conflict, breathing out from silent lips the consolatory ejaculation, "*Non omnis moriar.*"

A. C.

WE have to record the recent death of the following Continental medical men : M. Meulewater, Professor of Anatomy at Ghent, Knight of the Order of Leopold, at the age of seventy-two ; Dr. Wendling, of Strasburg, whose extraordinary success as a student at the University of Strasburg had given promise of a most brilliant career ; Dr. Sabin Papillon, of Belfort, chief surgeon of the French army, and the author of several remarkable publications on the questions of military hygiene ; Dr. Audhoin, one of the unfortunate victims of the recent disaster of the Ville du Havre ; Dr. Molas, of Auch, President of the Medical Association of Gers, at the age of eighty-two ; and Dr. Victor Uytterhoeven, member of the Superior Council of Public Hygiene, at the age of seventy-two.

DAUD PASHA, a doctor of the Paris School of Medicine, and Minister of Public Works in Turkey, died recently at Biarritz, the well-known watering-place in the south of France, whither he had repaired, on leave of absence, for the benefit of his health. He was one of the most talented and well-read men of Turkey. He spoke French with great elegance, and had practised medicine and surgery several years before being called to high political posts.

FRANCIS CORNELIUS WEBB, M. D., F. R. C. P., editor-in-chief of the *Medical Times and Gazette*, died suddenly in London, on the 24th of December last, aged forty-eight years. His death will be a great loss to the journal he conducted with so much ability, and matter of deep regret to the profession on both sides of the Atlantic.

DR. CHARLES GASPARD DE LA RIVE, of Geneva, M. D., Edinburgh, father of the more celebrated De la Rive, the physicist and electrician, died recently at Marseilles, of apoplexy. He was in his seventy-third year.

WE shall give in our next number an admirable portrait, now in preparation, of the late Prof. Louis J. R. Agassiz, whose death, on December 14, 1873, occasioned so great a blank in the scientific world.

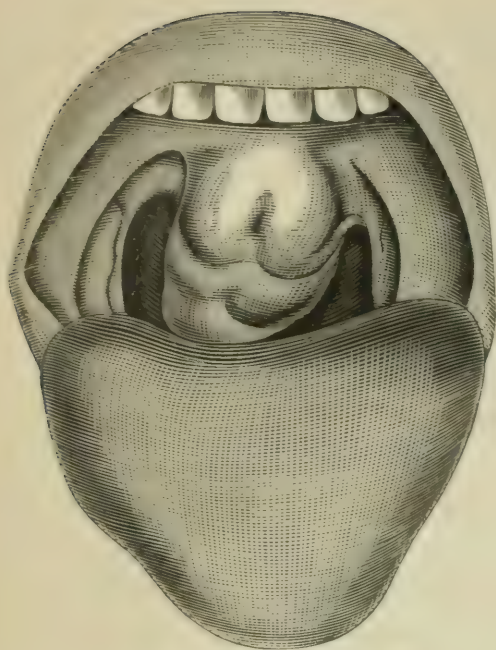


Fig. 1.

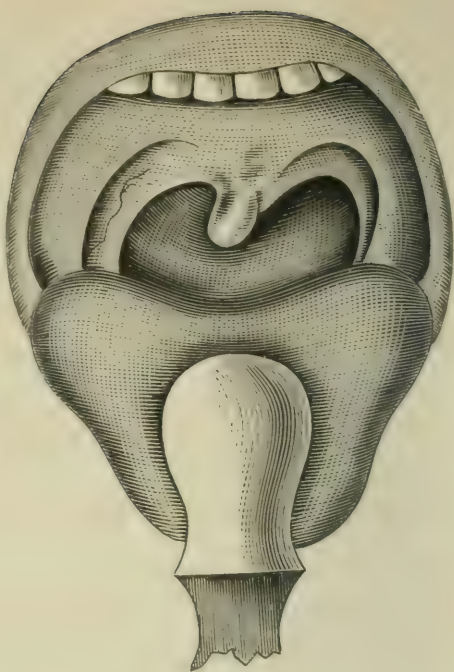


Fig. 2.

FOUR WEEKS AFTER OPERATION.

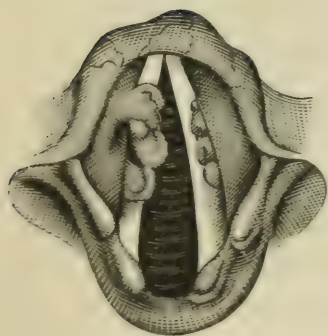


Fig. 3.

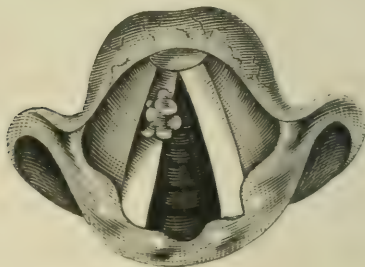


Fig. 4.



Fig. 5.

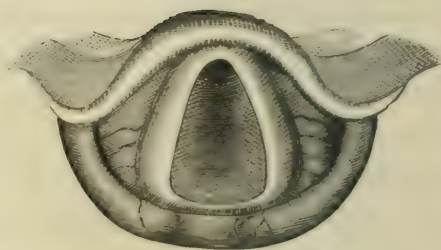


Fig. 6.

NEW YORK MEDICAL JOURNAL:

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[No. 3.]

Original Communications.

ART. I.—*General Considerations upon Uterine Pathology.*¹

By T. GAILLARD THOMAS, M. D., Professor of Obstetrics, and Diseases of Women and Children, in the College of Physicians and Surgeons, New York.

NOTHING more decidedly retards the progress of gynæcology, lowers it as a special study in the eyes of the sister departments, and fans the dying flame of a prejudice with which it has been able successfully to contend only during the past half-century, than the unsettled state of uterine pathology. In general medicine, in surgery, in all other special departments, the study of pathology is made the key-stone of the arch which supports them, and observers seem willing to agree as to fixed principles concerning it. In gynæcology, this whole subject presents the melancholy aspect of uncertainty and dissension. Many of its votaries, instead of taking broad and strong views, become the partisans of some special dogma or theory, which is warmly attacked by others, who hold some view equally narrow, incomprehensive, and exclusive.

As a result of this state of pathological confusion among

¹ Lecture delivered at the College of Physicians and Surgeons, New York, November 11, 1873.

the leading minds devoted to the department, every newly-fledged specialist feels warranted in elaborating and maintaining a theory of his own, or in attaching himself to one of the many which present themselves for his choice.

All must admit that to this department, to-day, as many able, zealous, and industrious laborers are devoted as to any other department of medicine. Why should such a body weaken its influence by adherence to dissentient and partisan views? Why is one impelled to entertain the view that inflammation of the parenchyma plays the important part of moving cause in uterine disorders; another that displacements of the uterus do so; another that the chief trouble consists in an irritation or hyperæsthesia in the uterine nerves; another that catarrhal inflammation of the uterine mucous membrane is the origin of most of its disorders; while still another attributes to the inefficient restoration of the uterus, after the structural changes due to utero-gestation, the most important rôle? To one who calmly and dispassionately studies the subject, not in the study but by the bedside, and who goes to it with a mind free from prejudice, and eager for the discovery of truth, it appears to me that it must in time become evident that truth lies not in any *one* of these theories, but is to be found to a certain extent in each. No pathologist claims that hepatic or cardiac or renal disease has always the same pathological origin: why should any one expect to find for uterine disorders a universal pathogenic factor?

At no period in modern times has this department been so favorably and respectfully regarded by the science of which it is part as at present. Now, then, has the time arrived when every one of its well-wishers should strive to obliterate all factions and parties, to free it from dogmas and narrow views, and place it where it should always have stood, upon the broad platform of an enlightened pathology.

That the uterus should perform its functions efficiently and naturally it is essential—1. That its innervation and circulation should be normal; 2. That its structure should be unaltered in character and proportions; and, 3. That no decided and permanent change should have occurred in its position. An abnormal state, developing in connection with any

one of these essential conditions, may derange the functional powers of this important viscus, and demonstrate itself by symptoms which produce greater or less discomfort to the woman. When, as very often happens, the first evil produces others, until at last all three conditions are interfered with, the gravity of the symptoms increases with simultaneous increase in their number and variety. Sometimes the first link in the chain of morbid action is an altered condition of the nerves governing circulation, some general or local condition reflecting itself upon these regulators of nutrition; as a consequence, an afflux of blood takes place to the uterine mucous membrane, and its vessels become distended, and in time dilated. This lasts for a variable time, when the second link is furnished in this manner: an excessive degree of nutrition is supplied to the subjacent connective or areolar tissue of the organ, and its size and weight increase. Then the third link rapidly develops itself. The uterus now being heavier than normal, its natural and hitherto sufficient supports are insufficient for its maintenance in position, and it descends in the pelvis, so as sometimes to alter the direction of its axis, and protrude between the labia majora; at other times its axis is not changed in its descent, and then the cervix, striking against tissues covering the curved surface of the sacrum, is bent forward so as to offer an obstruction to the escape of menstrual blood; at others, the fundus falls forward, laterally, or backward, either bending upon the neck, or by its displacement forcing this part out of position likewise. Then appear, as symptoms of this threefold disturbance, leucorrhœa, backache, dysmenorrhœa, difficulty in locomotion, and the long list of discomforts to which women thus affected are liable.

This, however, is by no means always the sequence of events. Sometimes the uterus, enlarged by utero-gestation, does not return to its original small size, but, remaining large and heavy, it falls from its place in consequence, and this disorder of position reacts upon the other two conditions which I have stated are essential to health—normal innervation and circulation, and an unaltered state of the structure of the organ.

Again, a uterus may be in perfectly normal state in every respect, when suddenly it becomes retroverted. As a consequence, innervation and circulation are at once disturbed, congestion occurs, a hypergenesis of tissue gradually takes place, and thus what was originally merely a displacement becomes a condition of congestion, enlargement, and chronic catarrh.

The position which I assume, with reference to the pathological series which may result in confirmed uterine disease, is this: that the pelvic organs of a woman who has hitherto been in perfect health may become gradually or suddenly diseased by one of the three following abnormal developments in the uterus: 1. Disorder in innervation and circulation; 2. Change in quantity of connective or muscular tissue; 3. Change in position. I assume, furthermore, that, the first here mentioned being the primary lesion, the second and third may result from it; that, the second being the primary lesion (as in subinvolution or the development of neoplasms), the first and third may result from it; and that, the third primarily showing itself in a perfectly healthy organ, the first and second may be its consequences.

Let us now proceed one step further. Those primary pathological conditions which most commonly produce disorder in the three elements which I have mentioned, may be said to constitute the especial factors of uterine disease. What are they?—

1. Catarrhal inflammation of the lining membrane.
2. Prolonged congestion of uterine tissues.
3. Excessive growth of connective or muscular tissues.

In the beginning one only may exist, uterine catarrh, for example; in time this may induce another, congestion in the parenchyma; and still later this excessive blood-supply may result in a third, hypergenesis of connective tissue. Whatever, then, tends to induce and keep up any one of these three morbid states tends directly to the establishment of confirmed uterine disease; and the consideration of this point brings us to the investigation of the individual pathological agencies which ordinarily produce such a result:

1. In a very large majority of cases of uterine disease, the

first link in the morbid chain is subinvolution, which produces, as direct consequences, passive congestion, hypersecretion by lining membrane, menstrual disorders, displacements, sterility, and interference, by pressure, with neighboring organs.

2. A certain number of cases are produced by disordered uterine circulation and innervation, the results of displacement of the uterus, either as a whole, or by bending of itself upon its axis. Such displacement or distortion induces passive congestion, hypergenesis of tissue, dysmenorrhœa, sterility, and endometritis.

3. A certain number of cases arise from primary catarrhal inflammation of the lining membrane of the uterus itself. This commencing as an entity results in hypergenesis of tissue, displacements, menstrual disorders, and sterility.

4. In a number of cases, by no means small, the circulation, innervation, and size of the uterus, are interfered with by obstruction to the escape of menstrual blood. Such obstruction distends the uterine cavity by imprisoned menstrual discharge, inflames its lining membrane, and results in leucorrhœa, dysmenorrhœa, hæmatocele, and flexions.

5. In some cases the uterus is, by sympathy with diseased ovaries, kept in a condition of exalted innervation and deranged circulation, which in time eventuates in congestion of the whole organ, and hypersecretion by the mucous lining. As consequences of these states, there appear as symptoms leucorrhœa, menstrual disorders, displacements, sterility, etc.

6. The development of benign or malignant growths, consisting of hyperplasia of one or more of the uterine elements, often deranges the innervation, circulation, and proportionate weight of the uterus, and results in displacement, sterility, menstrual disorders, leucorrhœa, pelvic pains, mechanical interference with surrounding organs, etc.

7. The uterus, although not primarily affected, may become displaced and congested from interference by contracting lymph, exuded in contact with it and over its surface, as a consequence of pelvic peritonitis. Such displacement and congestion may result in excessive growth of tissue and endometritis.

8. Disease not only of the neck, but of the body, and not

only of the mucous membrane, but of the proper tissue of the organ, is sometimes induced by laceration of the cervix, which results in eversion, and the exposure of a large and vulnerable surface to friction and injury during coition and exercise.

Let the pathological state which establishes the disorder be what it may, after it has continued for some time, and its instrumentality has resulted in fixed disease, the following symptoms develop as characteristic of such disease: leucorrhœa; menstrual disorders; pain in back, loins, and pelvis; sterility; hysteria or nervous symptoms; gastric, intestinal, and vesical derangements, etc. They are confined to none, but in time mark all.

With these facts before him, the student may well ask how any logical mind could consent to adhere to an exclusive pathological doctrine, ignoring or denying others of unquestionable importance and significance. It has, I think, been done by confounding cause and effect. He whose mind is hampered by the theory of inflammation will find it in every case of long standing in the mucous membrane, for congestion of this produces hypersecretion, and in the parenchyma, because hypernutrition in this part has resulted in hypergenesis of tissue. The organ is large, tumefied, secreting excessively, and tender to the touch; all these prove for him "inflammation" to exist. In the great majority of cases in which a diseased uterus is examined after it has been in an abnormal condition for a long time, the following physical signs will be discovered:

1. The uterus will be larger than normal.
2. Catarrh of the lining membrane will exist.
3. The vaginal face of the cervix will be in a granular condition.
4. The uterus will be displaced.
5. The ovaries will be found slightly enlarged and sensitive.

Here are five theories offering themselves for adoption, and in a conclave of five consultants each might hold an unassailable ground, and each might possibly be right. But, as no one has the key to the progressive development of this

complex condition, no one can prove himself so. According to my observation, the analysis of this collection of morbid states which most frequently furnishes the key to their solution is this :

Involution of the uterus was interfered with perhaps five years before, and subinvolution existed, and left the organ large and heavy ; this soon resulted in displacement, which impeded venous return ; from this a uterine catarrh arose, which excoriated by its discharge the vaginal face of the cervix : from this cause, combined with friction, granular degeneration took place ; and the irritations transmitted by this combination of irritating influences created enlargement and sensitiveness of the ovaries.

I say that, according to my experience, the most common factor of this series is subinvolution, but I do not say that it is the universal factor. It may be that all these lesions arose from congestion due to retroversion which has been neglected, and has long prevented free venous return. Or perchance the large granular surface which has been called an " inflammatory ulcer " is an eversion of the cervical mucous membrane due to rupture of the cervix which occurred five years ago in parturition, and has kept up nervous irritation and hyperæmia which have resulted in all these " signs of inflammation."

Impressed by the fact that, with many of the physical and rational signs of inflammation, the enlarged, sensitive, and engorged uterus is not inflamed, one party has endeavored to cut the Gordian knot by styling the anomalous state one of " irritability." But the term was badly chosen, and its introduction has accomplished more of confusion than of simplification. Nor have the profession generally been willing to accept a name signaling the nervous condition alone for a state characterized by congestion, hypergenesis of tissue, and coincident, probably resulting, nervous exaltation.

But, it may be asked, is not this condition of enlargement of the uterus, after all, a state of inflammation, of chronic metritis, however it may have arisen ? I answer, no more a condition of chronic inflammation than is the enlargement of the tonsils, which lasts for years in children ; or than the

tender, enlarged spleen, the ague-cake of malarial poisoning, or than the enlarged testicle of syphilis. I do not deny the name and character of inflammation to suppurative tonsillitis or quinsy, or even to that very rare disease splenitis, which sometimes ends in suppuration. Now, let the unprejudiced reader reply to this question from his own observation: Does the state of the uterus which we are considering most resemble the former or the latter of these pathological states? I cannot doubt his reply.

These remarks apply not only to the partisan of the dogma of inflammation, but to those of all others which have been adopted. He who wishes to sustain his views and his party by finding displacement will almost always do so, for a heavy uterus, which was in normal position in the beginning, generally falls from its place in time; he who looks for uterine catarrh will likewise be gratified, for a congested mucous membrane always gives forth an excessive secretion; and even he who will be satisfied with nothing but ovarian disease will often be able to sustain his theory, for chronic uterine disorder is very apt to affect in time these organs which are so intimately in sympathy with the uterus.

ART. II.—*On the Treatment of Intermittent Fever by the Hypodermic Injection of Quinine.*¹ By FREDERIC D. LENTE, M. D., Cold Spring, N. Y.

THE author of an able review of works on hypodermic medication, in the *American Journal of Medical Science*, remarks: "In the treatment of malarious fever, hypodermic medication bids fair to yield as brilliant and substantial results as for any other disease. There certainly need be no great delay in deciding its merits, and fixing any detail of treatment. As in many sections of our country malarious fevers are the prevailing diseases during a considerable portion of the year, there is abundant opportunity for trial, as there will be an overflowing measure of benefit resulting, should the observations already published be substantiated."

¹ Read before the Dutchess County Medical Society, January 14, 1874.

He adds: "We think it would be difficult to exaggerate the importance of this improvement in our art to those portions of our country scourged by malaria, and we cannot refrain from again urging an investigation of its merits upon the profession, requiring as it does no complicated apparatus, no trained skill in delicate manipulation, but simply a spirit of enterprise, careful observation, and candid report of results."

Being fully in accord with the sentiments above expressed, I have, for the past two years, been endeavoring to surmount some of the difficulties attending the practical application of this method of treatment, and to test the value of the reports heretofore published; and now present the results of my unfinished labor in this direction, merely as a contribution to the work, being fully alive to the fact that my experiments, though more extensive than any yet published, are not sufficiently so to *settle* the question as to its relative value, or the details of its execution.

It appears that Dr. Chassaud, of Smyrna, was the first experimenter with the hypodermic use of quinine. This was probably in 1861 or 1862; yet, after the lapse of eleven or twelve years, we have only occasional and meagre reports of its employment, and evidently very little faith among the profession in its safety or efficiency. This has arisen probably from at least two causes: one, the rose-colored hue of the early reports;¹ but principally the unpleasant accidents which have generally followed the injection of the solutions usually employed by physicians during the past few years. It has been my aim, therefore, to properly estimate the true value of the method in intermittents, and to overcome, by extensive trial, the pharmaceutical obstruction to its more general adoption.

Dr. Chassaud reports that, "of one hundred and fifty cases, he saw but one relapse after three months, using generally but a single injection." "Goudas reported fifteen cases, with like

¹ The fact that the cases reported were mostly in hospital practice will account for the great apparent success, perhaps; as an hypodermic injection of even four or five grains will generally check the disease for two or three weeks, and as patients are not apt to be kept in hospital long after the symptoms of disease disappear, the cases would be marked cured.

result. Eulenberg reports two cases of arrest of the cold stage by two grains; and reports two cases in which a single injection in the apyrexia checked the disease permanently." "We have, in two instances," says the reporter (*American Journal of Medical Science*) above referred to, "injected that amount of quinine an hour before the chill, and put a stop to the disease." Dr. James McCraith, surgeon to the Smyrna and Aiden Railroad, reported to the Royal Medical and Surgical Society, that he had found it very useful in the "pernicious intermittents," and gave one case of an alarming character, where three and a half grains produced a rapid rescue from coma and impending death. Dr. Moore, of the Bombay Hospital, reports its use in thirty cases of intermittent, and some cases of remittent, with "almost invariable success." In intermittents, he states that one injection sufficed, while, in remittents, he employs five or six. Dr. Greene, of Americus, Ga., in an article on this subject in the *Louisville Medical Journal*, 1871, speaks highly of the hypodermic use of quinine, but has seen "such serious inflammation and sloughing follow its use" as to cause him to discard it except in dangerous "congestive chills." But he expresses the hope that some preparation of the drug may be devised which will render it more generally applicable. The reason of his ill success is evident from the composition of his formula. The late Dr. H. D. Bulkley tried this plan in the New York Hospital, in some cases, and reported them at a meeting of the New York Academy of Medicine in 1866. He stated that he had the most gratifying results, "especially in pernicious intermittents from the South." His colleague, my friend Gouverneur M. Smith, M. D., according to Dr. Bulkley's report, also used this method in the same hospital, "with most gratifying results." Dr. Otto's experience will be noticed farther on. I have been told, by some of the resident medical officers of the Bellevue Hospital, New York, of some trials of this method there, but have never been able to get any details; and they did not seem to be *impressed* with its success, especially in pernicious fever, in which it was almost exclusively used. But the cases were, as I understand, of a rather desperate character. It would appear that, up to the present time, almost

all the published experiments with this method have been carried on in public institutions ; and there seems to be a general impression that it will admit of a very limited introduction into private practice. The experience of the writer will show that this is not correct. With patients who are kept in a proper state of discipline, and by judicious management, nine-tenths will submit to one injection at least ; and, among those who are victims to repeated attacks of fever, who have exhausted a variety of remedies, and their own patience also, who are suffering from the demoralizing influence of malarial toxæmia, with no "let-up" to its painful symptoms, there will be no hesitation when the treatment is proposed, with a proper explanation of its *modus operandi*, even though they or their acquaintances may have suffered from local troubles resulting from it. I have injected many patients this year who suffered from troublesome inflammation and abscess last year.

Let us first consider the *accidents* which are alleged to have occurred and to be liable to occur from this treatment. Inflammation of a circumscribed character, abscess, and sloughing, have frequently followed this procedure, and to such an extent as to have deterred most physicians from resorting to it, although many have been anxious to do so. Even *tetanus* has been charged to it. Notwithstanding the very favorable reports from tropical regions referred to, Dr. Maclean, of Netley Hospital, reports that, "of four cases in the hospital who had been thus treated, three had troublesome ulceration." Of the last one hundred cases reported in the *Indian Medical Gazette*, sixteen are said to have suffered from "ulcerations." The nature of these is not described. Sixty-eight of the cases are reported "cured." I have heard and read of cases where sloughing occurred, laying bare the muscles, etc. ; and I have had two slight sphacelations in my own practice, one quite tedious, the other a regular "dry gangrene," attended, from first to last, by perfect anæsthesia of the part ; an incision giving rise to a hard, sloughy mass (on the thigh) with a rapid and painless healing of the wound ; the patient caring little about it, and ready at any time to submit to the operation again, which he had already submitted to several times with

perfect impunity. Last year, when I was a novice in the method, and experimenting with solutions of various composition, I had many cases of inflammation and abscess, some of them exceedingly protracted and very annoying. Indeed, the inflammatory process, set up by solutions of quinine, and often by morphine also, and by other fluids, is peculiar. In many cases, days and even weeks may elapse before any marked trouble occurs, when a slow form of inflammation is set up, which results in a chronic abscess very little disposed to discharge spontaneously. In other cases, a tender induration merely remains for weeks or months, not causing any serious annoyance, and the soreness sometimes subsiding for days, to reappear again and again. The same solution, injected into a dozen patients, and perhaps in some of them in several places, may be perfectly harmless in a majority, but give rise to very troublesome *sequelæ* in a certain number; the general condition of the subjects being the same, or very likely of a more unfavorable character in those escaping the inflammatory trouble. I have said that tetanus has been charged to hypodermic injection of quinine; and, as the slightest probability of this would be an insuperable obstacle to the employment of this method, the allegation is worthy of notice. Two cases are reported in the *Indian Medical Gazette* of 1873 by a Dr. Odevaine, in which he injected a solution of quinine, which was followed by abscess and fatal tetanus. M. Arnold, of Algeria, also reported two cases of the same kind a few years since. I have heard of no such occurrences in this country, and it is well to remember that there are certain localities, mostly tropical, where tetanus occurs as a very common incident from the most trivial wounds; and even idiopathically, from exposure to damp, or sudden check of perspiration. I have elsewhere discussed this subject.¹ It is needless to say that it is the *wound and abscess* in those cases, and not the quinine-injection, which caused the disease. Still, *in such localities*, no prudent physician would subject his patient to such a risk.

A properly-prepared *solution of quinine* is, of course, the important desideratum, and several were proposed to me, as

¹ Article on "Jamaica," in *NEW YORK MEDICAL JOURNAL*, September, 1868.

having given satisfaction, but which were found to be impracticable. As an example of the extraordinary mixtures which have been highly recommended for hypodermic injection, I quote from the (London) *Practitioner*, for September, 1872, one by Dr. Otto, given in *Le Mouvement Médical*: "The quinine," he says, "should be dissolved in ether, which should then be filtered and allowed to evaporate to some extent, so that more concentrated solution may be obtained." Now, quinine is so nearly insoluble in ether that, for all practical purposes, it may be so considered. Prof. Maclean, of Netley Hospital, recommends an equally impracticable solution. In his report on the hypodermic injection of quinine, which was published officially in India, he says: "It is quite possible, with a little care, to inject six grains of the salt (sulphate of quinine) in twelve minims of water, without the aid of any acid. The proceeding is very simple. Three or six grains are placed in a watch-glass, previously warmed; to this, twelve minims of distilled water are added, and a moderate degree of heat applied, with a spirit-lamp, for a second or two." Then he proceeds to give minute directions, as to the warming of the syringe, the size of the trocar, etc., which I do not transcribe, as I doubt if any one will be able to get the solution ready. The mass will be found to be a semi-fluid paste before heating, and less fluid after. If we could, in this way, get six grains in *sixty drops* of water, it would be superior to any solution which I have heard of, or been able to produce by long experiment. Dr. Moore says: "I have used the strongest solution which can be prepared, viz., thirty grains quinine, eight or ten drops of dilute sulphuric acid, and half an ounce of water." Dr. Lorent uses acetate of quinine, of which he says, "thirty grains will dissolve, by the aid of heat, in two and a half drachms of water." Dr. Greene's solution, which gave him so much trouble, is: "℞. Quin. sulph. ʒss; acid. sulph. dil. gtt. x; aquæ bul. ʒss M." The formula employed in the New York Hospital is: "℞. Quin. disulph. ʒj; acid. sulph. dil. gtt. l; aquæ font. ʒj. Solve." Dr. Constantine Paul highly recommends glycerine as a solvent. The last suggestion has a great advantage over the others, in promoting the solubility of the drug with very little acid, and retaining it in perfect solu-

tion. But, unfortunately, it is irritating to the cellular tissue, very slow of absorption by it, and very prone to flow away from the small puncture after its injection. After failing with all the solutions hitherto recommended, I applied to a practical chemist, in New York, to prepare for me a solution which should contain "ten grains of the salt to the drachm, with the least possible amount of acid which will retain it in solution." His solution, as he stated, contained a minim of strong, or fourteen minims of diluted, sulphuric acid to the drachm. Notwithstanding this amount of acid (about four times the amount used by Dr. Moore, six times that of Dr. Greene, and about seventy per cent. more than the New York Hospital formula), his solution was not permanent, but deposited crystals abundantly, unless kept at a temperature of 70° or 75° Fahr. It was, therefore, generally necessary, in cool weather, to heat it before using. How previous writers have managed, therefore, to prevent their solutions from depositing, or to use them without the aid of heat, is a mystery to me. As regards Dr. Lorent's solution, I have not tried it, for I had so uniformly failed with formulæ for dissolving the different salts of quinine without acid, so confidently recommended, that I had no greater faith in the solubility of the acetate than of the bromide, the bisulphate, the hydrochlorate, etc. Before using the ten-grain solution, I had tried a much weaker one, only four grains to the drachm. But, as the injection of even pure water into the areolar tissue is quite irritating, it was a nuisance, both to the patient and physician, to be obliged to inject a drachm of fluid in order to introduce so small a quantity of the drug into the system. After using the stronger solution for some weeks, and finding that I was getting a rather inconvenient crop of inflammation, abscesses, and sloughs, and creating a damaging but very natural prejudice against a very valuable remedial measure, I reduced the strength to five grains to the drachm; but the smallness of the dose and the still frequent occurrence of inflammation and tumefaction induced a trial of some further modification. I had also been annoyed by a cryptogamic deposit in the solution after standing for a short time; and, with a view to obviate this, and also to test the efficacy of Lister's antiseptic plan on the cellu-

lar tissue, carbolic acid was added to the solution; and, after some trials, the following formula was adopted, and has been used ever since: \mathcal{R} . Quinæ disulph. gr. 1; acid. sulphuric. dilut. \mathfrak{M} c.; aquæ font. \mathfrak{Z} j; acid. carbolic., liq., \mathfrak{M} v. Solve. Place the quinine and water in a porcelain dish, over a spirit-lamp, heat to the boiling-point, and add the sulphuric acid, stirring with a wooden spatula. Filter at once into a bottle and add the carbolic acid. This gives full six grains to the drachm. Even this solution will deposit some crystals at a temperature of 50° ; and, of course, at or below that temperature requires to be warmed before using. The carbolic acid also, I think, alleviates the pain of the injection, as there is but little complaint, in most cases, after the first few drops. I can recommend this with considerable confidence, so far as danger of local difficulty is concerned, since it has been used by myself and my various assistants at least one hundred and fifty times, or over three hundred insertions (each hypodermic *dose* consisting of at least two injections). Neither have I, nor any of the gentlemen who have used it under my direction, had any serious trouble with it.¹ In one case, after using it twice, it produced each time a diffuse cellular inflammation of the arm, which yielded slowly to cold-water applications, and I desisted, although the patient was anxious to submit to another trial, so far superior did she find this method to that by the mouth. In another exceptional case, a singular effect was produced, already noticed in this paper—anæsthesia of the part, followed by dry gangrene of a small mass of cellular tissue. This was the fourth injection of this patient, or the eighth insertion, none of the others giving any trouble whatever. Patients frequently experience a numbness of the part, sometimes lasting weeks after the operation, possibly from the effect of the carbolic acid. The injected part is usually tender for a few days after injection, when accidentally touched; sometimes inconveniently so, when the patient is at manual labor

¹ Dr. Murdock has used this method to a moderate extent, and his experience is incorporated with mine. I have, at different times, been assisted by Dr. A. A. Smith, of New York, and by Drs. Farmington, Griffith, and Young, of the resident staff of Bellevue Hospital, who are, I understand, using this solution now in that hospital.

(on this account, it is better to select the left arm), but it rarely incapacitates a laborer, even for half a day. Since this solution has been used, I have met with full as many cases of trouble arising from injections of *morphine*, though so much smaller in bulk, as from it. All hypodermic injections, however small, will occasionally cause inflammation, abscess, and even sloughing, sometimes of a persistent character.

The question of the proper strength and composition of the solution is a vital one, as regards the ultimate success of this valuable mode of treatment, and, as it cannot be considered at all settled, I have already dilated considerably on this point, and would remark further that the inconvenience, slight though it is in a majority of cases, of introducing the needle two and occasionally three times at a sitting, and inserting sixty to ninety minims of fluid more or less irritating, is sufficient to induce the hope that a solution equally safe will be devised, which shall contain two or three times as much of the drug. It is true that, by the aid of heat, *applied at the time of the injection*, double the quantity in the same amount of fluid may be used; and this brings up the question of *concentration* of the solution, which most writers have considered essential. Two ideas seem prominently to occupy the minds of those who have employed this method, both of which are probably erroneous and mischievous: one, that the solution cannot be too concentrated, provided little or no acid be used; the other, that the acid is the principal or only cause of the serious accidents sometimes attending the injections. Now, it will be found that, in cases of local trouble, more than one cause is in operation, sometimes several. Thus the delay in the absorption of the fluid, one portion of areolar tissue only a few inches from another absorbing more readily; this delay being also sometimes attributable to the *imperfect solution of the salt*, and the latter the result usually of using *too little acid*. The character and condition also of the *instrument* is perhaps a not infrequent cause. The *manner* of performing the operation, slight as it is, has its influence. Dr. Moore says, "I insist on a perfectly clear solution of the alkaloid," and he might have added, at a *temperature of 60 Fahr.* I am inclined to think that the *acid*, so largely diluted

as it is, even in the solution advocated here, 1.7 per cent. of the undiluted, can have no injurious effect on the tissues greater than that of the other agents employed, if as great, and that there is more danger in using too little than too much. The longer the solution remains in contact with the areolar tissue, the greater the danger of inflammation; and the more *complete* the solution, the more rapid, *ceteris paribus*, the absorption. Here is a very recent case in illustration of this fact: A young girl was injected five days ago, with two syringefuls of solution. One passed readily into the circulation; the other remained, and was disposed to exude through the puncture; the finger was kept on for some time to prevent it; but the fluid passed away for some hours, drop by drop. The parts about this puncture are much inflamed, and, notwithstanding the application of cold, there is still some redness and induration, while the other puncture has given no trouble at all.

Having settled upon a proper solution as far as present experience enables us, there are some precautions advisable. It is important to have a *gold* needle, not one merely gilded. Messrs. Tiemann & Co. prepare them very skillfully, and, with care, they seldom require sharpening, which may easily be done on a fine hone. The syringe and needle should be washed out after each operation, and the piston frequently oiled, as it is both stiffened and rotted by the solution. The outer and anterior portion of the *arm*, not too near the joints, are usually chosen for the insertions, although the outer and upper portion of the thigh present desirable localities. We have, however, injected all parts of the body, in cases where repeated injections were required. I usually make the two punctures two and a half to three inches apart, so that the wet application, which is often desirable, to prevent inflammation, may cover both. The injection should be made with deliberation. The first few drops cause more or less severe smarting, and I wait until this ceases, or nearly ceases, perhaps half a minute or a minute; then continue *slowly*, drop by drop, as fast as the patient can endure it, without inconvenient pain, being guided also somewhat by the rapidity with which absorption takes place, judging by the greater or less elevation of the integu-

ment around the puncture. As soon as the needle is withdrawn, I cause the patient or a by-stander to put the finger over the puncture for two or three minutes, to prevent the fluid from exuding. In case of threatened inflammation, or much soreness, I direct the patient to bind on a wet folded handkerchief or pledget of lint as a precautionary measure.

As regards the best *time* for the operation, the general impression seems to be that it should be done just previous to the expected paroxysm, and Dr. Moore, of Bombay, says: "The best time is shortly before the cold fit; but it may be done during the cold stage with the effect of lessening and sometimes stopping the whole paroxysm." I can corroborate the last observation, and shall subjoin some cases in illustration of this important point.¹ I am not fully prepared, as yet, to say whether there may *not* be an advantage *as regards the ultimate effect of the operation*, in following the prevalent notion. But, it so often happens that the severe train of symptoms attending a paroxysm of *epidemic* ague is mitigated, even arrested by the injection on the spot, that, when convenient, I always give the patient the chance. But, as a general rule, I have injected without any reference to the date of the paroxysm. This point will bear further investigation. I am informed, however, by Dr. Meredith Clymer, that, in a recent report of English army-surgeons serving in malarious regions, the verdict is decidedly in favor of administering quinine (this does not refer to the hypodermic method) *during* the attack.

As regards the *dose*, it depends, like that administered by mouth or rectum, on so many circumstances that one cannot be definite. But the *variation*, depending on *idiosyncrasy* and age especially, is not nearly so great as in the other methods. The doses of various reporters have varied from two to ten grains. The fact is that, at present, it is limited somewhat in obstinate cases by the insolubility of the drug, a dose

¹ I have long been in the habit of injecting *morphine* gr. $\frac{1}{2}$ in the paroxysm of intermittent fevers, preferably in the cold stage, to the infinite relief of the patient, and the arrest of the paroxysm to a considerable extent. When the suffering is particularly severe, it is better to combine the morphine and quinine. I described this method in a letter to the late Prof. Elliot, published in the NEW YORK MEDICAL JOURNAL in 1870.

of twelve or eighteen grains requiring of the solution here recommended two or three drachms, too large an amount of fluid except in desperate cases, where severe pain and abscesses are comparatively of little moment. My first doses were two or three grains, and the most marked results were obtained from these small doses, probably because the medicine was more largely diluted, the same quantity of fluid being always used; possibly also because the disease assumed a more obstinate type as the epidemic wore on. For the latter reason it was found necessary to increase the dose to *six grains*, and in a few cases to nine or ten grains. When more than six grains were employed, I usually made three injections, but sometimes used a syringe of greater capacity, and only inserted twice. When the patient has a good deal of adipose tissue, and is not particularly intolerant of the injections, forty minims may be used in one spot.

Repetition of Doses.—During a severe epidemic, it will usually be necessary to repeat the dose every fourteen or twenty days; in some cases every six days; and now and then every day or two. In these cases the patients are so tolerant of the injections that they care very little for them. Where the resulting soreness or inflammation is troublesome or tedious, it is better to resort, if possible, to some other treatment. During the intervals it will not usually be necessary to give any anti-periodic or tonic. In my own cases, desiring to test the value of the treatment as accurately as possible, I rarely gave any medicine, even of a cathartic nature, unless required by constipation.

Want of time, and the fact that cases under my charge would often, of necessity, pass into the hands of one of my assistants, and *vice versa*, and that cases of an obstinate character would sometimes be taken in hand by friends or nostrum-venders, and thus disappear, caused more or less confusion in my records, and have precluded as thorough and systematic investigation of the subject as I at first proposed. But, such as they are, I present my statistics to the profession, without waiting to attempt the solution of the various important questions involved, hoping that they may at least arouse more interest in the subject than my predecessors have done.

My own operations number 238 on 134 patients, or 476 insertions. Those of the other physicians, who have aided me in carrying out this treatment, number 151 on 63 patients, or 302 insertions; giving a total of 389 injections, or 778 insertions. These do not constitute all the injections of quinine which have been used by us during the past two years, but only such as have been recorded. In various ways failure to note injections occurred frequently, and Dr. Murdock did not commence regular notes of his cases until 1873. Of patients under eighteen years there were 29, the youngest five months; and it is remarkable that in no instance that I can call to mind has any unpleasant local or general result happened to very young children—such as frequently occurred, especially during the first year, with adults, and with a similar solution. A few of the very young infants were injected a number of times, as vomiting was almost incessant.

In 104 cases only one injection (two insertions) was used; in 47 cases two operations; in 12 there were three; in 3 there were four; in 6 there were five; in 1 six; in 1 nine; in 1 ten; in 1 twenty; in 1 *twenty-nine*; in 1 *forty*.

In 9 cases it was noted that the hypodermic method succeeded after failure of quinine and other remedies by the mouth; in 17 cases, on the other hand, that no marked effect was produced by the injection. In 4 of these cases, however, less than five grains of quinine was injected, and a repetition of the operation might have led to a different result, many cases requiring large and repeated doses of quinine and other remedies, and a resort to various plans of treatment as each, in turn, lost its effect. In 4 others of these cases failure resulted from mistaken diagnosis, the disease proving to be continued fever, over which the injections have no control. The injection thus proved to be an important means of diagnosis; the symptoms of the beginning of these irregular forms of intermittent fever being almost identical with those of typhoid fever.

In 14 cases, prompt relief of the urgent symptoms, that is within half an hour, was experienced. In 14 cases the injection failed to check the disease as long as one week, and in these cases no further trial of the plan was made. It must

also be borne in mind that some of the *successful* cases may have used remedies by the mouth without our knowledge, though care was taken to prevent, as far as possible, this source of confusion in the experiments. In some of Dr. Murdock's cases he used quinine by the mouth in conjunction with his injections.

In 21 cases vomiting is noted as having been so obstinate as to have precluded the administration of medicine by the mouth in any form, and generally of nourishment also. In every case this symptom was promptly relieved by the injection. The temperature, during the paroxysm, varied from 102° to 107° —rarely as high, however, as 106° .

In making deductions from these statistics, it is necessary to take into account the fact that many of the cases, occurring during the epidemic which has prevailed so extensively throughout a large extent of our country for the past three years, have been remarkably rebellious to treatment; that is, the disease, though arrested with comparative ease for the time, has very generally *recurred* under *any* treatment;¹ many cases requiring very large and repeated doses of quinine, and frequently a recourse to a variety of drugs and plans of treatment, as each in turn lost its influence; also, that in some cases, in which at first sight the treatment might appear to have been a failure, and which is noted in the above analysis as such (that is, as unsuccessful in *arresting* the disease), the benefit derived from it, as auxiliary to other remedies, was nevertheless very important: the arrest of vomiting, of severe cephalalgia, and other pains, sometimes the marked improvement of appetite and strength. Cases in illustration of this are appended.

In two particulars, the effect of the drug administered hypodermically differs essentially from its use by the mouth, viz., in seldom inducing severe cerebral symptoms; and in *promptly* imparting a feeling of vigor and hopefulness seldom observed after the usual methods.

¹ In ordinary cases of intermittent fever, such as I have met with in this locality for the past twenty years—that is, previous to this remarkable epidemic, which has invaded regions heretofore considered proof against malaria—I have no doubt the success of the hypodermic treatment would have equaled if not exceeded that of the reporters already quoted.

To recapitulate—this method would seem, in the light of our present experience, to be particularly applicable to those fatal cases of the disease called “pernicious” or “congestive fever,” in which no reaction or a very imperfect one takes place, and a patient dies as in the collapse of cholera, because neither the *stomach* nor the *rectum* will absorb medicine even if they could retain it and there were time for it to act: to cases where *vomiting* is persistent, or where intense pain or other distress is a prominent symptom: to *quotidians*, where the paroxysm is so protracted as to afford little time for the action of remedies by mouth or rectum: to patients who cannot tolerate quinine on account of cerebral symptoms: to the cases of the poor, and of laboring-men where promptness in action and cheapness of material are important considerations. Indeed, in an economic view, especially in the case of armies, of hospitals, and eleemosynary institutions, its advantage is very manifest, particularly in regions where the doses by the mouth need to be enormous; and from all parts of the world, temperate climates as well as tropical, where malaria prevails at all, we have reports of the necessity of these extreme doses in certain cases of epidemics—the doses varying from a scruple and a drachm, several times a day, to three drachms.¹ I quote the following, in illustration of this, from a letter just received from Dr. J. C. Young, resident physician of Bellevue Hospital, giving the experience of Dr. A. W. Woodhull, surgeon to the Ninth New York Volunteers, during the last three years of our civil war:

“The greater part of his experience was gained in the swamps of North Carolina, at Newport News, and around the city of Norfolk. He met the maximum number of cases at the first-named place, where, in addition to the malarious influences so rife there, the troops were subjected to some pri-

¹ Socin, Professor of Surgery in Basle, states (*London Practic.*, December No., p. 424) that, in the severe septicæmic-wound fevers, during the Franco-German War, he employed quinine in the daily quantity of 6.7 grammes (90 to 105 grs.). “Under this treatment he saw many unexpected recoveries.” He states also that the cinchonism was moderated by a considerable quantity of wine which he gave at the same time. No physician in Europe is more trustworthy than this able man.

vations, and were, for a portion of the time, partially submerged in water. He saw upward of two thousand cases a year, a tolerably fair proportion of which had a tendency to assume the pernicious type. He himself suffered from the congestive chills. The first he did not recognize, and obtained relief by emesis. The congestion was pulmonary, and his face and extremities became livid, almost black. The second was relieved by a drachm of quinine, taken in two doses at an interval of five minutes. In other cases, he used 200 grains, and in some few 240 grains (the maximum) within twenty-four hours. The largest dose was, however, one drachm. He usually gave half-drachm doses at intervals of an hour or two—repeated until marked cinchonism was produced. He reports but few deaths, even when the patient suffered from the congestive variety; and, in the fatal cases, death usually ensued from the inability of the patient to retain the large amount of quinine necessary to produce cinchonism.”

I have selected the following typical cases, very briefly reported, as likely to be of interest to the profession, and in illustration of the preceding remarks and statistics :

Cases in which very Small Doses were successfully used.

CASE I.—Robert McC., aged forty years; general health good. Quotidian four days, coming on in afternoon, lasting until morning. His sufferings intense, especially the cephalalgia; and his vomiting for some hours uncontrollable. Has taken repeated doses of chinoidine, but could retain very little. Injected in the thigh four grains in one drachm of fluid. Next day, July 11th, much better. Repeat.

July 25th.—Patient remained quite well until August 2d, when, after riding twenty-seven miles in a hot sun, and being much overcome by heat and fatigue, he had a recurrence. He continued to have attacks at intervals, broken up temporarily by various methods, the injections having caused a troublesome abscess.

CASE II.—P., aged fifteen years. Has had fever all spring and summer, broken repeatedly by quinine and chinoidine, but sometimes recurring even while taking the medicine.

August 10, 1872.—Injected half a drachm (2 grs.).

11th.—Feels pretty well, and is at his work. Repeat.

21st.—Has remained well. Fever subsequently recurred, as I heard.

CASE III.—Mrs. McC., aged sixty-three years. In bad health for twenty-five years. Has suffered, more or less, all summer from irregular intermittent. Has taken quinine and chinoidine, but she is more or less under the influence of malaria all the time. Injected to-day, August 12th, one drachm (2 grs.).

August 20th.—Continues quite free from any manifestations.

28th.—Has been in better health since injection than she had been for six months. Had no recurrence.

CASE IV.—Mrs. M. R., aged sixty years; a feeble woman, always complaining of some ailment, and subject to attacks of uterine and nephritic disease. Has been having repeated attacks of quotidian. Has now dysentery (probably malarious), and is vomiting incessantly; can retain no medicine and is much reduced. Temperature 105° . Injected one drachm ($\frac{1}{4}$ grs.).

August 20th.—Has been pretty well; no symptoms of fever. Has taken no medicine. Some deafness remains.

September 8th.—Continues well.

CASE V.—Mr. N., a stout, healthy farmer, aged thirty-six years. Has had several attacks of fever, and has broken it by quinine, chinoidine, and nostrums. But the present attack (quotidian) is attended by unusual symptoms—violent abdominal and crural cramps, vomiting incessantly, great debility, cephalalgia, etc. Gave him yesterday an anti-emetic mixture and chinoidine pills; but they were rejected. His temperature was 106° . Had his chill to-day two hours ago. Temperature now 105° . Injected quinine solution 3j (3 grs.).

August 17th.—Second day. Has passed over the time for attack two hours. Temperature 100° , skin pleasant, pulse feeble. Injected two grains.

20th.—No fever since last date. Injected two grains.

21st.—Feels “more like himself,” as he says; able to work a little. Subsequently had another moderate attack.

CASE VI.—N., aged fifteen years, a stout, healthy lad, pre-

vicious to his attacks of malaria, which have reduced him very much, notwithstanding a systematic course of quinine and chinoidine. Injected to-day, August 19th, half a drachm of solution ($2\frac{1}{4}$ grs.).

August 21st.—Is still very weak in his limbs; no fever. Injected one drachm (4 grs.).

24th.—Feels “a great deal stronger,” and better than he has been for a month. Injected one drachm (4 grs.).

September 5th.—Well.

CASE VII.—Mrs. W. W., aged forty-five years; a thin and feeble-looking woman always, but almost reduced to a skeleton now by long-continued attacks of malarious fever (two years). Has never succeeded in breaking it up for more than eleven days. Comes from New Jersey. Quinine has such an unpleasant effect on her that her physician told her she “must never take it again.” Injected quinine two grains. The immediate effect was “faintness,” and, within fifteen minutes, dizziness and excessive weakness, which marked the effect of the drug by the mouth. She could not walk without assistance, and was laid on a sofa with the head low, and a stimulant given. She made one or two attempts to vomit, but the disposition soon passed off; her surface was cold and clammy. Pulse not materially affected. She left the place the next day, and I heard from her some months after, as having continued free from fever, and gaining constantly in strength.

CASE VIII.—Mrs. M. Has been living on the other side of the Hudson River, several miles below. Has had intermittent for two summers. Broke it up last summer by a nostrum, but failed this summer. Chill is now due in four hours (quotidian). She applies, not for this trouble, but for the removal of her tonsils. Performed this operation, and then injected four grains of quinine.

September 26th.—Patient writes that she has had no return of fever.

October 7th.—Had no return of fever until yesterday.

Cases in which Immediate Relief of Distressing Symptoms was obtained.

CASE I.—M. L., aged seven years. Has had mild attacks during almost the whole summer; easily broken up by qui-

nine, in full doses. Has also taken the drug pretty regularly in prophylactic doses. But the attacks recur. Has one now (August 29th). Injected 12 minims of strong solution, 2 grains.

September 6th.—Has continued well.

15th.—Continued well until to-day, and was attacked with headache, nausea, etc. Injected 4 grains. Was relieved in fifteen minutes; fell asleep, and awakened entirely free from symptoms.

CASE II.—E. D., aged twenty-three; a stout, healthy girl. First attack two days ago.

August 29th.—Has chill on her now. Temperature $103\frac{1}{2}^{\circ}$. Inject 4 grains.

30th.—Quite well to-day.

September 6th.—Has continued well until this morning. Has a chill. Inject quinine, 12 grains. In a few hours, the paroxysm having been cut short, she was able to resume her work. Feels only a little weak.

CASE III.—Sarah G., aged eleven years.

August 29th.—Has had quotidian for four days. Has been taking chinoidine regularly. But it has had no effect. The attack to-day is earlier and more severe. She is now shaking violently, and has a racking headache. Inject 4 grains. Within five minutes, the shivering ceased, and very soon the headache almost ceased.

30th.—Feels bright and well to-day.

CASE IV.—Mrs. T., aged forty; a stout, healthy woman, called me on August 30th, while in a violent paroxysm of ague. Intense headache, pain and soreness in abdomen and dorsal region of spine, also vomiting; has been suffering, more or less, for twelve hours. Has scarcely had any sleep for a week. Inject quinine, $8\frac{1}{2}$ grains.

September 6th.—Fell asleep immediately after the injection, and slept eight hours. Has felt a great deal better; able to work, but weak.

13th.—Had a chill yesterday, and two to-day. Inject 5 grains.

16th.—Felt relieved in less than an hour after the injection, and has been well since.

22d.—Has had no recurrence.

CASE V.— — McCue, aged eight years. Has been suffering almost incessantly, for some weeks, from intermittent, which has now assumed the quotidian type. He vomits so constantly now that he can take neither food nor medicine, and is much reduced. Inject $4\frac{1}{2}$ grains. Felt better almost immediately, and in a few hours commenced eating, and retained his food.

CASE VI.—Mrs. C.

June 3d.—Irregular quotidian, with intense headache. Has had a variety of anti-periodic treatment, with little effect. Inject quinine, grs. vj.

28th.—Has had no paroxysm since last date, but has been on anti-periodics as a precaution. Is now under Dr. Murdock's charge for severe ophthalmia (iritis and corneitis), intense headache, and nausea. Has had hypodermics of atropine and morphine, but they make her "wild." Injected quinine, grs. vj.

29th.—Headache was promptly relieved, and she is much better to-day in every respect. The ophthalmia subsided rapidly.

CASE VII.—Mrs. J. T.

September 20th.—Sick for three days. Quotidian. Continual nausea, intense right supraorbital pain. Injected quinine, gr. vj. Pain was almost entirely relieved before the insertion of the second syringe-ful.

21st.—Better, and about the house. Slept well all night. No fever, no headache.

CASE VIII.—Mrs. M. T.

September 22d.—Tertian. In a violent paroxysm of fever now. Temperature 105° . Suffers especially from an intolerable "load or oppression" in epigastrium. Insists on an emetic. Injected quinine, grs. vj. Epigastric distress relieved before the first syringe-ful was completed, very much to the surprise and delight of both patient and doctor.

30th.—Quite well since.

CASE IX.—M. K., aged sixty-two years.

September 26th.—Feeble and asthmatic. Has been very ill for some time, with quotidian; the symptoms severe and almost continuous, reducing his strength very much. No sleep

for several nights. Inject solution Magend., gr. xv, and to take quinine pills.

26th.—Slept well; but, as he could not retain the quinine, has had a severe chill to-day. Pulse frequent, and very feeble. Intense headache, semi-conscious. Inject quinine, grs. vj.

28th.—Went to sleep about an hour and a half after the injection, and slept well. Feels a great deal better, except the debility.

CASE X.—Mrs. L. P.

October 19th.—Suffering from quotidian for some days; the symptoms almost continuous. Has fever now, attended by violent "cramp" in the epigastrium. Inject grs. vj.

21st.—Says the cramp was relieved in fifteen minutes. Feels the pain returning in the stomach. Repeat injection, which again relieved the symptom in ten minutes.

24th.—No trouble since last date.

CASE XI.—Mary C., aged twenty-one.

November 1st.—Has had repeated attacks during summer. Has lately been taking twenty-seven grains of quinine daily, with no effect. Suffering now from most intense frontal headache. Inject grs. ix. Head-symptoms mitigated before the completion of the operation.

2d.—Slight cinchonism, but feels relieved of all painful symptoms.

CASE XII.— — Anderson.

September 19th.—A feeble old man, suffering for some weeks from quotidian, and has been on quinine pretty regularly, with but little effect. Headache and nausea continuous; debility rather alarming. Injected quinine, grs. vj. Was almost immediately benefited.

20th.—Much better. Up and dressed, and eating, with a fair appetite.

Other cases, precisely similar to the above, might be quoted; but they are still very exceptional; and, in most of these cases, the disease recurred after a longer or shorter interval, and were again injected, or had other treatment.

Some cases of *malarious cephalic neuralgia* were promptly relieved, like the following:

CASE I.—A. H., aged fifty.

December 5th.—Had supraorbital neuralgia about four weeks since, and was relieved by an hypodermic injection of morph. et atropia, administered by Dr. Murdock. Since then, has had a regular paroxysm of febrile intermittent, and the neuralgia has recurred, and is periodical. Injected quinine, grs. viij.

December 31st.—Has had no return at all.

CASE II.—Mrs. T. B.

September 5th.—Has been troubled with malarious manifestations for eight months, previous to and after her confinement, these being confined mostly to cephalic pain and debility, never any regular paroxysm. They resisted all ordinary anti-neuralgic remedies, and only yielded to large doses of quinine. Has been kept most of the time, since the attack was broken up, on quinine or chinoidine; for some time, has complained of a pain at the vertex, which has become severe and continuous, but worse at certain hours of the day. Six grains of quinine every night has kept it under somewhat, but does not remove it. Has also been on pills of iron, quinine, and strychnine, with no very good effect. To-day, injected quinine, gr. vj.

September 9th.—The headache has almost entirely subsided.

January 9th.—Has continued well, until about ten days since. Has now the same symptoms, but less severe. Inject 5 grains.

February 1st.—No pain since. Has taken no medicine since first injection.

In the following cases an unusual number of quinine injections were used, and *vomiting* occurred, also a most troublesome complication :¹

¹ Since this paper was written, I have received the January number of the *American Journal of Medical Science*, in which I find an article by Dr. George A. Musick, from which I quote the following: "For several days my patient's life 'hung by a thread,' the stomach rejecting every thing; but, by this method (hypodermic) it (quinine) was administered with facility, and its action was prompt. To it and the administration of sufficient nutriment by the rectum during the days of excessive gastric irritability, I believe my patient owes her life, more than to any thing else.

"I have given quinia by the *rectum*, both in septicaemia and in pyaemia,

CASE I.—Mrs. J. W., aged thirty-two. This patient has been more or less an invalid for a number of years, suffering from uterine disease, aggravated anteflexion, and endometritis. Four or five years ago, while pregnant, was attacked by low fever, of a remittent type, which could only be arrested for a time by quinine; finally, vomiting set in, and she was reduced to such a state of emaciation that the propriety of the induction of labor was discussed, but she pulled through. In 1870, earlier in her pregnancy, she was threatened in the same manner, and Dr. Murdock, warned by former experience in her case, after consultation, brought on labor, and relieved her. Early in January, 1872, she again became pregnant, while suffering from malarious symptoms, and very soon uterine contractions, attended by pretty sharp pain, commenced; and, as her stomach would retain no medicine, hypodermic injections of morphine were resorted to. She was under the charge of Dr. Murdock; and we determined, in view of the chance of the anteflexion being corrected thereby, to carry her entirely through her allotted time, if possible. As the contractions commenced the moment she was entirely free from the influence of morphine, the anodyne injections were necessary to the end of the nine months, when a healthy child was delivered by the doctor, who proposes to give this interesting case in detail. Of these injections she had over three hundred during her pregnancy. At the same time, as it was impossible to give quinine by the mouth, and of the utmost importance that the malarious paroxysms should be prevented, it was found necessary to resort to the hypodermic injection of quinine; and one containing six grains was given every six days throughout her pregnancy, except an accidental omission, which was followed by an attack, which prostrated her very much. She took, in all, forty of these injections, or eighty insertions. The insertions were all in the arms and thighs, and none of them were followed by the slightest local trouble.

CASE II.—Mrs. L. This is a still more interesting case, during my military service, but its absorption into the system was so slow that little if any good was accomplished by it. Had I given it at those times by hypodermic injection, I have no doubt that my success would have been greater."

which has been under the charge of Dr. Murdock and myself for four or five years; and, if it ever ends, Dr. M., who has had the *onus* of the case on his shoulders, purposes to give the details to the profession. Suffice it to say that, for the same reasons which influenced us in Case I., we were compelled to resort to hypodermics of morphine and quinine for several months, and are still going on with the latter; and, as her uterine trouble, from which her other ailments have sprung, was a fibrous tumor, intramural, of considerable bulk, and not accessible to surgery, it was determined, after we had failed with other methods, to try ergot, and the hypodermic method was adopted; so that, for the past year, or from December 28, 1872, to November 30, 1873, she has had 167 injections of Squibb's fluid extract of ergot, or over 6 ounces and a half. From July 21st to the present time, January 21, 1874, she has had an hypodermic dose of quinine, averaging 7 grains every six days; 29 injections, over 60 insertions, or 203 grains of quinine. For six months prior to September 1, 1872, she also required an hypodermic of morphine, combined always with atropine, our invariable custom now, daily; so that she has had, during a portion of the year, 182 injections of morphine and atropine, 167 of ergot, or 334 insertions of ergot, and 29 injections, or 60 insertions of quinine—a total of 576 syringefuls of the four drugs, and in only one instance after an injection of ergot, made by myself, did any considerable local trouble result, an abscess of the thigh—although the patient was in a most miserable condition of health all the time, kept alive for months on small portions of pulverized raw meat, champagne, brandy, and sometimes biscotine. A delay of a day or two in the quinine injection is sure to be followed by a severe paroxysm of intermittent, and now and then even within the six days. I will anticipate the further publication of the case by stating that the tumor has diminished at least two-thirds, and that the patient's condition now is better than it has been for a year, and she is steadily improving, all hæmorrhages, which were extremely difficult to control, having ceased long since.

CASE III.—This patient, a feeble woman, aged about thirty years, was confined October 27, 1873, attended by Dr. Far-

rington, one of the resident physicians of Bellevue Hospital, who reported that she flooded both before and after confinement. The *post-partum* hæmorrhage was promptly arrested, but she lost a sufficient quantity of blood to reduce her very greatly; and, as she had suffered for a long time from malaria, she subsequently became extremely anæmic. She was convalescing very slowly when mammary inflammation set in, abscesses formed, and simultaneously she was attacked by her old enemy malarious fever, and she was alarmingly reduced, the vomiting being extremely persistent. Neither medicine nor food could be retained on the stomach, nor could she bear enemata, on account of diarrhœa. Under the circumstances, Dr. Murdock, who succeeded Dr. Farrington in the management of the case, resorted to hypodermic injections of quinine, which were commenced on December 6th, and continued either every day, or alternate days, until January 9, 1874, at which date she had had twenty injections, or forty insertions, averaging seven grains at each injection. The injections kept the disease at bay until December 25th, when she had a chill; since which date the nausea and vomiting, as well as the diarrhœa, having been promptly arrested by *electricity*, from six to twenty-four grains of quinine have been administered daily by the mouth in addition to that contained in the injections, as the case was so desperate that it was considered proper to saturate the system as freely as she could bear.

Notwithstanding this, so firm a hold did the malaria have on her system, that she had a return of the fever on December 30th, since which no manifestation has appeared, and she is improving daily. No local trouble has resulted from the injections, nor have they annoyed her enough to produce any complaint.

It has happened not unfrequently that a severe malarious attack immediately preceded, or coincided with, or succeeded parturition. In these cases the hypodermic injection had a particularly gratifying effect. I cite one case only in illustration of this class, as this paper has already become much more extended than was anticipated.

Case reported by Dr. G. W. Murdock.—Mrs. I. M., thirty-eight; confined by Dr. M., December 26th. Forceps at

superior strait; every thing proceeded favorably till the 28th, just forty-eight hours after delivery, when she was attacked by a severe chill, attended by intense pain in head, back of neck, dorsal region, and abdomen; lochial discharge arrested; no mammary secretion; uterus enlarged and very tender; temperature, 105° ; pulse, 130. Injected quinine, grs. viij.; morph., gr. $\frac{1}{6}$, at 10 A. M. At 10 P. M., patient more comfortable. Temperature, 103° ; pulse, 100. Injected quinine, gr. iv.; morph., gr. $\frac{1}{6}$.

December 29th.—No fever; lochia reëstablished; milk appearing in breasts; temperature normal.

30th.—Doing well.

ART. III.—*Embolism of the Arteries of the Extremities.* By SAMUEL B. WARD, A. M., M. D., one of the Surgeons to the Presbyterian Hospital, New York, and Professor of Surgery at the Woman's Medical College of the New York Infirmary.

THE following case occurred in the writer's practice last summer; and the rarity of such, together with the poverty of the literature of our own language on the subject, are his reasons for offering this paper for publication.

CASE I. *Heart-Disease of Sixteen Years' Standing; Sudden Occlusion of Right Popliteal Artery, after an Attack of Endocarditis; Apparent Improvement, and Attempt at Collateral Circulation for Two Days; Secondary Thrombosis of Femoral Artery, extending as high up as Poupert's Ligament, at least, and occluding all the Collateral Branches; Gangrene of Leg on Fourth Day; Double Diaphragmatic Pleurisy and Trismus on Eleventh Day; Death on Twelfth.*—D. P., aged thirty-two, Irish, married, plasterer by trade; has never had rheumatism, syphilis, or any serious illness, except intermittent fever about fifteen years ago, and diphtheria eight years ago. When sixteen years old he was first told by his physician that he had heart-disease, the character of which was not stated, and was advised to give up hard work and avoid excitement. The diagnosis has been frequently verified

by others, and he has been obliged to quit work for an hour or two at a time, but no longer, on two or three occasions.

August 6, 1873.—Was first called to see this patient, and found his stomach largely distended with gas, bowels somewhat tympanitic, pulse 150, irregular, and intermittent. He was belching up a great deal of wind, and suffered slightly from dyspnœa. As he had undergone no unusual exposure, exertion, or excitement, and had been drinking freely for some time of lager-beer, which had disordered his stomach, and interfered with his appetite, it was thought that the derangement of digestion was, perhaps, the main cause of his trouble, and a mixture of hydrocyanic acid, pepsine, and bismuth, was ordered.

7th, Morning.—Felt much better until latter part of night; stomach in better condition, but bowels constipated; pulse 120, and stronger. Examination of heart revealed hypertrophy of left ventricle, with dilatation, and some valvular disease, of the exact nature of which I could not be certain, on account of the rapid and irregular action of the organ. Prescribed cathartic of rhubarb and magnesia, and ten drops of tincture of digitalis every four hours.

Evening.—Bowels have moved, and feels more comfortable.

8th.—Extreme suffering from dyspnœa during past night. Urine examined and found normal; no œdema of lower extremities at any time. This morning Prof. A. L. Loomis saw him in consultation; confirmed the previous diagnosis, and added, as the nature of the valvular trouble, aortic obstruction, aortic regurgitation, and mitral regurgitation, and endocarditis was also supposed to exist. A purge was ordered of ten grains each of calomel and rhubarb, with five grains of quinine. For the tincture of digitalis we substituted teaspoonful-doses of the infusion of the fresh leaves, with eight grains of bitartrate of potash, every two hours.

11th.—Patient has improved steadily since last date, and ate, with relish, a beefsteak for his dinner at 12 M. to-day. Bowels quite loose. At 1.30 P. M. I was sent for in haste; but, being out at the time, did not see him till 2.45. In the mean time Dr. Cole had been called in. I found, on reaching his

bedside, that at half-past one, while walking across the floor, he had experienced a sense of numbness in the right leg, remarking that he had no control over it. This was followed, almost immediately, by exceedingly acute pain in the muscles of the calf, compelling him to lie down. Dr. Cole at once directed the limb to be bathed in hot mustard-water and vigorously rubbed, and had given him twenty drops of Magendie's solution, and twenty grains of bromide of potassium, with the effect of only partially easing the pain.

Examination of the limb on entering the room showed me that the muscles were perfectly flaccid; the skin was white as marble, and apparently as bloodless; and the surface, from a hand's breadth above the knee to the extremity of the toes, perfectly cold. Pulsation could be felt in both tibials of the left limb; on the right side no pulsation could be felt below the opening in the adductor magnus, for the passage of the femoral. The popliteal could not be felt on either side, on account of the muscularity and fatness of the patient. Dr. Cole says that, when he first examined the limb, the muscles of the calf were hard and contracted, and that there were well-marked muscular twitchings. These disappeared after the first dose of morphine. The limb lay on its outer aspect, was flexed at the knee, and at certain points the epidermis had been separated by the friction. Sensation was very much diminished, if not absolutely destroyed; and it was only after repeated efforts, and with considerable pain, that the patient was able to make the least movement of any portion of the limb below the knee. An effort to straighten the limb caused excessive pain. The patient's general condition was indicative of acute suffering. His head and upper extremities were bathed in perspiration, and he tossed about the bed incessantly, begging some one to shoot him to put him out of his pain.

The diagnosis was made of embolism of the right popliteal artery by a clot or vegetation, from the valves of the heart. The immediate indication was, to relieve the pain; the danger, that of gangrene and its complications.

To ease the patient, it was necessary to give two grains of morphine, hypodermically, in the course of two hours, in fif-

teen-drop doses at intervals of twenty minutes. The limb was wrapped in cotton-wadding, bottles of warm water placed near it, and the patient directed to keep as quiet as possible.

Dr. Loomis saw the patient again at 9 p. m., confirmed the diagnosis, and suggested that the morphine might be supplemented from time to time with hourly doses of thirty grains of bromide of potassium. Weak milk-punch was ordered, and, as he was fully under the influence of morphine, as indicated by itching and contracted pupil, no more was given, though he had not yet slept.

12th, Morning.—Comfortable night, sleeping most of the time, ate some breakfast; no headache or nausea. Natural warmth has extended down as far as the knee-joint, and there is great tenderness on pressure in the popliteal region. No redness, swelling, or tenderness, over the femoral vessels. In testing the sensibility of the skin, the line limiting it was found to pass irregularly around the leg, at an average of about four inches below the knee; slight purplish discoloration of the skin, corresponding pretty accurately with the insensible portion, and caused apparently by extravasated blood. Moving the limb caused great pain; but the patient could himself raise the whole extremity without much inconvenience, and without moving any joint below the hip.

Evening.—Patient has eaten moderately during the day and been comfortable. No marked change in limb.

13th, Morning.—Passed a good night. This morning natural warmth has extended down about four inches farther than yesterday; sensation is extending slowly downward, and the discoloration is fading a little above. In other words, there is every appearance that collateral circulation is being established. No arterial pulsation can be felt at a lower point than previously. General condition good; eats well; and sleeps well with the aid of morphine.

At 1 o'clock p. m. Prof. H. B. Sands saw the patient in consultation, and we concurred in a favorable prognosis as to the salvation of the limb, grounded on the facts above stated.

14th.—Condition of limb slightly worse. Discoloration deepening and extending, and above it is a zone, about six inches wide, of hyperæsthesia. General condition good in

every respect. *No pulsation can be felt in the femoral below the middle of the thigh.* Heart's action less regular and weaker. Morphine again; and prescribed digitalis, and two grains of quinine every two hours. Ordered plenty of strong beef-soup, or mutton or chicken broth, milk and eggs, and half an ounce of brandy every two hours.

15th.—Patient worse, weaker and delirious. *No pulsation can be felt in the femoral even at the groin.* There seems to be thrombosis of the artery extending upward from the occlusion. Dr. Sands saw the patient again, and it was found that a surgical needle could be run its entire length into the calf of the leg without the patient's knowledge, and that no blood followed its withdrawal. The prognosis had therefore to be modified; the patient must necessarily lose his limb, and little hope was entertained of his recovery. A proposition for immediate amputation was unhesitatingly rejected. Carbolic-acid ointment to combat gangrenous odor.

16th.—Little change; delirium less. Phlyctenulae appear on gangrenous skin, filled with dark-colored serum. Urine again found normal.

17th.—Worse; incessant incoherent talking, and picking at the bedclothes. Tongue coated, but not dry; no sordes. Limb about the same. Seemed for the first time to have fever; temperature 99.6° in axilla. Brandy increased to an ounce and a half every two hours, and all the nourishment ordered that he could take.

18th.—Stronger and less delirious. Bowels have moved well. Temperature 99.2° .

19th.—No important change. Line of demarcation indicated by enlarged blood-vessels at a hand's-breadth below the knee. Slight erysipelatous blush on outer side of knee, which was painted with iodine, and five drops of the tincture ferri chlor. was ordered every two hours.

20th.—No change.

21st.—Very restless night; delirium worse; pain more severe, and met by morphine. Erysipelas disappearing.

22d.—Miserable night on account of pain. Delirium worse, and of lower type. Detected a commencing pleurisy at base of left lung. At noon he was unable to open his mouth,

or protrude his tongue in the usual manner; respiration 60 per minute and shallow; temperature 104.5° . At 5 o'clock P. M. Dr. J. R. Leaming saw him in consultation, and found diaphragmatic pleurisy on both sides; confirmed the diagnosis of aortic obstruction and regurgitation, but could find no mitral disease. Agreed to give him thirty grains of calomel; but when an effort was made to do so it was found impossible on account of trismus. At 9 o'clock P. M. he could recognize no one, was restless, but not suffering.

23d.—At 2 o'clock A. M. he died, perfectly quietly.

On account of the feelings frequently expressed by the patient during his lifetime, it was impossible to obtain permission to make any *post-mortem* examination whatever—a circumstance much to be regretted. The symptoms, however, are so clear that there can be no reasonable doubt of the diagnosis.

For the history of the literature of this subject the reader is referred to M. Dumaz's "Thesis for the Degree of Doctor of Medicine," Paris, 1872; and to a paper by Dr. John A. Lidell, of this city, in the *American Journal of Medical Sciences*, January, 1873, page 37. Those who have contributed most to elucidate it, and the kindred subject of thrombosis, are Dupuytren, Cruveilhier, Virchow, Carswell, Legroux, Billroth, and Cohnheim.

Etiology.—There is no doubt that disease of the left side of the heart is the principal cause of embolism in the systemic circulation. We have only been able to find one case recorded as the latter, in which the former was not known to exist, and in every case in which an autopsy was made the diagnosis was verified. In the exceptional case¹ the occluding body was a portion of an atheromatous patch on the abdominal aorta, which lodged at the bifurcation of that artery, and occluded the left primitive iliac.

Now, rheumatism is recognized as being the chief cause of heart-disease; but it will be noticed that, in the case which is the foundation of this paper, there had been no previous attack of this nature; and the comparison of some twenty-five published cases shows that *chronic* endocarditis is more likely to cause the accident than the acute form which accompanies

¹ "Thèse de M. Ch. Benni," Paris, 1867.

rheumatic fever. After chronic endocarditis, the result of no special disease, follows acute rheumatism; then the puerperal state; and lastly gout, pleurisy, and the abuse of alcoholic drinks.

In this connection an interesting question arises: Why does gangrene so frequently follow embolism, while ligature of the same artery at the same point is comparatively free from this danger? The explanation is, that in the case of ligature the thrombus, which immediately forms, extends no farther than to the nearest collateral branch; while in a case of embolism the previously diseased and weakened heart propels the blood with so much less velocity, and under so much less tension, that the collateral arteries are not well dilated; and again, the thrombus, which forms above the occlusion, extends upward, constituting what is known as secondary arterial thrombosis, and occludes the collaterals. In the case here reported, the progress of this complication, and its direct influence on the condition of the limb, were plainly noted at the time.

Embolism occurs more frequently in females than males; is most common between the ages of twenty and forty, but by no means restricted to that period; and is more frequent in the lower extremity than the upper, and somewhat more so on the left side than the right.

Pathological Anatomy.—Virchow, Panum, Weber, Billroth, and Cohnheim, have taught us most on this head. The researches of the latter¹ are the most recent that have been published. They confirm previous conclusions in many respects; but show, on the other hand, that hæmorrhagic infarction is due, not to collateral arterial fluxion, as Virchow and Rindfleisch teach, but to a retrograde movement of the blood in the veins of the affected district; and, further, that the escape of blood takes place through the mechanically intact walls of the vessels, and not subsequent to a rupture of the latter. The result of embolism is shown to be serious if the occluded vessel is a terminal one; and may be slight if it receives collateral branches beyond the point of occlusion.

An autopsy in case of death, soon after embolism, shows the light-yellow, firm, fibrinous clot which caused the obstruc-

¹ "Untersuchungen über die embolischen Prozesse," Berlin, 1872.

tion, situated usually, though not always, at the bifurcation of an artery. Above and below this, the vessel is filled with a soft, dark-colored clot, the length of which depends upon circumstances. If circulation has been reëstablished, it extends in both directions to the point where a collateral branch is given off or received; if no attempt at collateral circulation has been made, it extends downward to the termination of the artery, and upward to an indefinite distance; frequently, in the lower extremity, as far as the bifurcation of the common iliac, or of the aorta itself. The vein corresponding to the obliterated artery is sometimes filled with coagula, sometimes free.

An autopsy months after embolism, and when the vitality of the limb has been preserved, will show the same conversion of the vessel into a fibrous cord which follows the ligature. It is also possible¹ that, "if the embolus consists of pure fibrine, it may be dissolved;" in which event no lesion would be found to show that the accident had ever occurred.

One important step in the organization of the embolus, and the conversion of it, together with the wall of the vessel, into a fibrous cord, is *acute secondary endarteritis*. In autopsies, made some days after the embolism or thrombosis, this condition is frequently found, and was formerly supposed to be the cause of the trouble; it is now shown to be part of the process which Nature adopts to remedy the mischief.

Diagnosis.—This is usually easy. The symptoms are, first, an unusual sensation in the limb, suddenly developed, generally amounting to pain so acute as to be the prominent symptom; occasionally it is described as simply an itching, pricking, formication, or numbness. Frequently this comes on in the midst of apparent good health. In one case M. Legroux² noticed the disappearance of a bellows-murmur in the heart at the time of the occurrence of the embolism; in our own case the mitral-regurgitant murmur seems to have disappeared. It is suggested that the same explanation may be offered for both; viz., that the fibrinous accretion which gave rise to the murmur became, by its detachment, the embolus.

To this unusual sensation is added *paralysis*, more or less

¹ American translation of Billroth's "Surgical Pathology," pp. 325, 326.

² "Thèse pour le Doctorat en Médecine," quoted in Dumaz's thesis.

complete, of the limb, and to this also the patient usually calls attention.

The third symptom is *decrease or abolition of sensation*. All of these symptoms might occur with paralysis from disease or injury of the nervous centres.

. When one adds to these, however, the three symptoms dependent on mechanical obstruction in the vessel—*paleness, coldness, and absence of arterial pulsation below the affected point*—we have a group of phenomena which belong to embolism and nothing else. As occasional symptoms we may also add nausea, vomiting, and muscular twitchings. The physiognomy of the patient is usually indicative of a serious lesion.

The after-history of the case depends, of course, upon the result. If death ensues, the paleness of the limb gives place in from two to six days to violet discoloration, and the rest of the history is simply that of gangrene. The line of demarcation is rarely situated at the level of the embolus, but usually much lower down. It is not uncommon, with gangrene extending only to the knee, to find occlusion at the bifurcation of the common iliac. Another point well worthy of note is that the constitutional symptoms are for many days so slight as to delude the patient and his friends into the belief that the lesion is not nearly so serious as the physician knows and states it to be. From ten to fifteen days frequently elapse before the thermometer indicates any constitutional disturbance, and during this period appetite and digestion are usually good.

If recovery follows embolism, all the symptoms gradually disappear as collateral circulation is established; and pain is spontaneously developed in the course of the affected artery, due to the arteritis already mentioned. Sometimes, however, circulation returns much more rapidly than would be possible through collaterals. M. Hallopeau records a case in which this occurred while he happened to be examining the affected limb. The color returned as rapidly as if a fine injection had been thrown into the main artery, an hour and a quarter after embolism had taken place, accompanied by natural warmth which soon became excessive; and at the end of three hours all the symptoms had disappeared. Disintegration and solution of the clot could alone account for this.

Many mistakes in diagnosis in this affection have been made, due in part to the fact that the pathology of the lesion has only recently been made out. A no less celebrated man than Cruveilhier¹ admits having fallen temporarily into error. The subject which he is discussing is gangrene by cadaverization, and the first paragraph reads as follows :

“In this form of gangrene the dead parts present the appearance of a fresh cadaver, or of a recently-amputated limb. It is observed particularly in the case of the death of a limb by sudden and complete interception of arterial blood. Such was the case of a female, aged forty, suffering with cancer of the breast, who was suddenly seized with paralysis of sensation and motion in the whole left lower extremity. I thought at first that I had to deal with a case of paralysis, and therefore had the limb warmed with hot linens, and friction made with spirits. But soon afterward, struck with the death-like coldness of the limb, with its cadaverous paleness, which extended to the groin and ceased abruptly with the paralysis; and having noticed, besides, that, at certain points, the friction had detached the epidermis, I at once recognized my error, and diagnosticated the form of gangrene which I have thought proper to call *gangrene by cadaverization*; which the result was not long in confirming.”

Cruveilhier, then, recognized that this form of gangrene was due to obstruction of the main artery of the limb; but the migration of the occluding embolus from the heart was an important point in the history of the disease which had not then been grasped.

The records of the New York Pathological Society, and the medical journals of a few years past, both in this country and Europe, afford a number of cases that would be of interest in this connection did they not occupy so much space.

One more point must be noticed, which is, the frequency of relapse; or, more correctly speaking, the probability that, after one artery has become the seat of an embolus, others will share the same fate. Schutzenberger² records an extreme instance of this kind, in which there occurred, first, embolism

¹ “Anatomie Pathologique,” Paris, 1862, p. 252.

² *Gazette Médicale de Strasbourg*, 1857, p. 110.

of the left brachial, followed by restoration of the circulation ; forty days afterward, obliteration of the bifurcation of the aorta, followed by establishment of collateral circulation ; fifty-four days later, hemiplegia ; and, six days after that, sudden death, which was found to depend on softening of the brain, the result of plugging of the right internal carotid. Infarctions were also found in the liver and spleen.

Prognosis.—From what has been already said, it is clear the prognosis is bad. The physician must always be sure that the heart is restored to a healthy condition before the patient can be pronounced out of danger. The writer has been able to find but one recovery in thirty published cases. It is probable that other cases have recovered, the histories of which have never been published, owing to the doubt that has always been supposed to hang over the diagnosis. To the kindness of our friend Dr. Wm. M. McLaury we owe one such :

CASE II.—Mrs. M., American, aged thirty-one, married, having always enjoyed fair health, went through her first and second pregnancies and confinements without any unusual occurrence. Had never had any heart-disease. Twenty-four hours after her second labor, which occurred on January 10, 1865, she had a severe chill, and two or three hours later was suddenly seized with intense pain in the right leg, which soon amounted to *perfect agony*. On examination the foot and leg were found to be very pale up to a line about three inches below the knee, and through the same extent coldness, with a very great diminution, if not total absence, of sensation, was noticed. Unfortunately, the arteries were not examined with reference to their pulsations. The power of voluntary motion was abolished, and there was a single purplish streak from the knee down the outer side of the leg on to the foot.

Two days later, phlyctenulae made their appearance on the skin, which had then become gangrenous, and the integument sloughed off until the muscles, tendons, ligaments, and bone, were all exposed from two or three inches below the knee down to the line of the metatarso-phalangeal articulations, leaving only a narrow strip of skin with irregular borders, corresponding to the previously-mentioned purplish line. The limb was kept covered with yeast-poultices and lying in a bed

of bran. The internal treatment was supporting and stimulating, the patient's daily allowance being four pounds of fresh, lean beef made into strong broth; three eggs and a sufficient quantity of milk made into punch; and, as stimulants, one quart-bottle of brandy, one-half pint of sherry, and one pint of champagne—the latter to control nausea. The patient also frequently took as much as four ounces of laudanum in the twenty-four hours to relieve pain.

One month after the accident the slough had separated and granulations appeared; at the end of three months she was able to leave her bed; at the end of five months began to go out-doors; gradually her health was fully restored; and at present a large scar is to be seen, and a granulating surface, rather smaller than a silver dollar, which has never healed.

The lodgment of an embolus at the bifurcation of the popliteal, so disposed as to entirely occlude the anterior tibial, and diminish the flow through the posterior, would account for just what took place in this case.

Treatment.—When embolism of the main artery of an extremity has taken place, it has been proposed to make an effort to break up the clot by kneading the affected part, and thus allow the fragments to pass into vessels of less importance and facilitate their solution. The writer cannot find that success has ever attended such efforts.

It has also been recommended to administer carbonate of ammonia in pretty large doses, with a view of dissolving the coagulated fibrine; and Dr. Richardson claims that he has met with considerable success in thus effecting solution of emboli of the pulmonary artery.

At all events, the warmth of the limb must be maintained in order to assist the formation of collateral circulation, except in those cases in which, as Otto Weber points out, there is danger from venous hyperæmia and thrombosis; then cold and astringent lotions should be resorted to, first among which he classes lead-water.

At the same time we must not forget the great importance of the heart complication which usually exists, and impart to the contractions of that organ additional strength and tone by whatever means each may consider most expedient. Digi-

talis and alcohol will probably occupy the first rank among these in the estimation of all.

If all these means have failed to maintain the vitality of the limb, the question of amputation comes up. The danger of septic poisoning stares us in the face, so long as the dead parts are in contact with the living; and, if our patient is fortunate enough to escape that, there follows the exhaustive process of ulceration and suppuration by which Nature removes the gangrenous limb, and cicatrizes the stump. For these reasons M. Dumaz advises the amputation of the extremity just as soon as gangrene declares itself by the appearance of violet marbling on the previously pale limb.

We are unable to find any case recorded in which amputation has been performed at this early period, before the line of demarcation is formed.

The two latest works on surgery which are supposed to contain, in a comparatively small compass, the results of all past experience, as well as of the most recent scientific research, are Pitha and Billroth's "*Handbuch der Chirurgie*," and Holmes's "*System of Surgery*." In the first of these Otto Weber says,¹ "The amputation of gangrenous parts should, as a rule, never be undertaken until the line of demarcation of the gangrene is plainly marked out by Nature; even then it consists often in only an unimportant assistance, in that one only divides the firmer tissues." The reason given for this rule is, that the flaps are so very apt to slough.

In Holmes's "*System of Surgery*," Chas. H. Moore, in an article on "*Gangrene from Occlusion of Arteries*,"² asks, "Should the gangrenous limb be amputated?" and answers, "Surgical experience and reasoning both prompt a general reply in the negative." His reasons are, that the occlusion is frequently at a point higher than the proposed amputation, that gangrene is very apt to occur in the flaps, and that the result of amputation is in general fatal. The vast majority of our American surgeons entertain precisely similar views in regard to gangrene in general.

The best argument in favor of very early amputation in

¹ *Op. cit.*, I. Band, I. Abth., I. Abschnitt, S. 566.

² Vol. iii., p. 407.

this particular case is, that the great danger in waiting lies in the extreme probability of secondary arterial thrombosis occurring, with the embolus as a starting-point; and that by removing the limb early, and at a point sufficiently high to include the embolus, this may be averted. The theoretical reply would be, that a thrombus would immediately form at the point of ligation of the vessel in the amputation, and would be just as likely to extend upward to a fatal distance as that which started from the original embolus, under the given conditions of a weakened and diseased heart. If, in reply, it be urged that nothing can be supposed to diminish the chances of recovery after gangrene has fairly set in as a consequence of embolism in a patient with chronic heart-disease, we have nothing to say, except that in many cases where the occlusion exists at the bifurcation of the common iliac or of the aorta, it will be impossible to include the embolus in the amputated limb. That delay is not necessarily fatal, is shown by the fact that Bryant, of Guy's Hospital, has twice successfully amputated the leg, in consequence of gangrene from embolism occurring in the course of scarlet fever, after the line had formed.

To condense into a single paragraph the conclusions which may fairly be drawn from what has preceded, we may say that arterial embolism may be looked for especially in patients who have long been suffering from heart-disease, and generally between twenty and forty years of age; that the diagnosis is generally easy, paleness, coldness, and absence of arterial pulsation in an extremity, being added to the symptoms which usually accompany paralysis; that the prognosis is very bad; and, finally, that the treatment consists in an effort to break up the clot, if the artery be superficial, or effect its solution, to favor the formation of collateral circulation, and to omit no measures tending to strengthen and regulate the heart's action, and nourish and support the patient. Amputation is unadvisable until the line of demarcation has formed and extended deep into the soft parts, unless the attempt be made to thus save the patient's life, just at the time when gangrene is evidently impending, and secondary arterial thrombosis has not yet extended upward to the point where the artery would be divided in the operation.

In concluding this paper, the writer would like to call attention to the differential diagnosis between arterial thrombosis and embolism. The symptoms of the latter have been already clearly set forth; the history of the former can be read in any well-marked case of senile gangrene, accompanied by degeneration of the inner arterial coat, rendering it so rough that it readily affords attachment to fibrinous clots.

There are, however, many other cases of arterial occlusion, followed by gangrene, on record, occurring after confinement; during an attack of scarlet fever, with heart-complications; in cancerous patients; during the course of a typhoid or other low form of fever; in cholera; in goitre; in peritonitis, and other diseases—most of which have been reported as cases of thrombosis. The histories of most of these cases read just like those of embolism, and where death has ensued the *post-mortem* examination has usually shown a clot of lamellated fibrine, situated often at the bifurcation of an artery, and no lesion of the arterial walls of such nature as to render probable its existence prior to the occlusion. M. Dumaz puts the argument concerning the point of origin of the clot very clearly, though he was not the originator of it. Considering the pressure of blood in the arteries (amounting to about six feet of water), and the rapidity of the circulation (blood passing from the pulmonary radicles to the extremities in four or five seconds), it is almost impossible to conceive that a clot could form on the healthy wall of an artery; having no inflamed or roughened surface to which to attach itself, it must be washed along in the current. It seems much more probable that the clot forms and grows in the heart, “where every thing is favorable for the production of a fibrinous clot, the chordæ tendineæ, the columnæ carneæ, the play of the valves, the anfractuosités, the irregularity of the contractions, their lack of strength in the puerperal condition, typhoid fever, goitre, and other diseases.” He supposes, then, that the clot having begun to form behind one of the valves, protected in a little eddy, or in a fossa between two columnæ carneæ, grows until, by its increased size, it projects into the cavity of the heart far enough to be detached from its moorings, or a part of it broken off by the current, and carried into the circulation.

Dr. B. W. Richardson¹ claims that fibrinous coagulation in the heart is of comparatively common occurrence before death, especially in diphtheritic croup, gives the diagnostic signs of the accident, and points out the course of treatment to be pursued.

Dr. Barnes² has given us a table of cases of puerperal gangrene, by the remarks appended to which it is clear that he is not decided whether they ought not to be considered as cases of embolism, rather than thrombosis, at least in some instances.

Dr. Beverly Robinson,³ of this city, in a very fair discussion of the probability of the *ante-mortem* formation of heart-clot, supports Richardson's view, and strengthens it by the relation of *post-mortem* examinations in which its character was carefully observed.

So far as we can ascertain, no one has attempted to *prove* that a fibrinous clot ever forms in the calibre of a healthy artery; it has simply been the custom to report the cases, to which we now refer, as instances of thrombosis, depending on extreme coagulability of the blood. If, however, they be classed as cases of embolism, the prognosis previously given must be modified, and made to depend very greatly on the presence or absence of heart-disease of long standing. In twenty-three cases which we have been able to collect, where it was absent, we have ten recoveries; while, in thirty cases in which it was known to exist, we have but one.

Clinical Records from Private and Hospital Practice.

I.—*Case of Tumor of Soft Palate.* By CLINTON WAGNER, M. D., Physician to the Metropolitan Throat Hospital; Member of the New York Laryngological Society; late Clinical Assistant Hospital for Diseases of the Throat, London, etc., etc.

CASE I.—Angelina T., a negress, aged thirty-five years, tall, and of rather spare habit, of previous good health, with

¹ *British Medical Journal*, December 14, 1872.

² "Obstetrical Transactions," vol. iv., p. 31.

³ "Thèse pour le Doctorat en Médecine," Paris, 1872.

no evidence of hereditary or acquired taint of constitution, was sent to me, for treatment, by my friend Dr. de Brémon, of this city.

History.—Six years ago she had an attack of diphtheria; one year later she first observed the growth in her mouth, which seemed to remain stationary for about three years, but a year ago it began to increase, and attained its present size about six months prior to the operation for its removal. At no time has she suffered pain, nor has there been enlargement of the cervical lymphatic glands; but, latterly, deglutition and articulation have been greatly interfered with. An examination discovered a large, oval, non-pedunculated tumor in the soft palate, the apex of which was directed downward and forward, resting upon the tongue and extending from a little to the right of the uvula to the space between the left anterior and posterior columns of the palate, and a few lines anterior to its posterior border (*Plate 1*).

With the aid of the rhinoscope, I discovered the uvula which previously I had thought was involved in the tumor. The posterior column of the palate was pushed upward and backward, presenting the appearance of attachments to the vault of the pharynx.

Upon making a digital exploration behind the soft palate, the firm, hard, rounded base of the tumor could be distinctly felt lying in its substance, and unattached to the base of the skull; this fact decided me upon operating through the mouth.

Operation.—Nélaton, in a case somewhat similar, employed successfully the electro-chemical method.

Mr. Durham, in his article on "Naso-Pharyngeal Tumors," in Holmes's "Surgery," thinks the galvano-cautery wire can be advantageously employed wherever the pedicle of the tumor can be reached and encircled, but says "satisfactory experience is yet wanting."

Rejecting the operation by electrolysis as tedious in performance, and doubtful in its results, I determined to try the galvano-cautery wire.

A battery of four large cells was used; bending the platinum wire to the proper angle, I endeavored to encircle the

tumor at its base by passing the loop behind the soft palate. In the first attempt the wire slipped, and I succeeded in removing only about one-third of its inferior portion. Several subsequent efforts were made, but each time the wire broke upon making the connection.

As the patient was becoming rapidly exhausted from pain and fright, I resorted to the knife. Seizing the pendent portion of the tumor with a pair of forceps, I requested Dr. Gruening to make gentle traction downward and forward. It was dissected from its attachments by an incision commencing at the anterior column of the palate, on the left side, and carried backward between the tumor and the posterior border of the palate.

Hæmorrhage occurred from the wound several hours after the operation, but was readily controlled by the tampon and liq. ferri persulphatis; for a short period the liquids regurgitated through the nasal passages; the wound healed kindly, however, and at the expiration of ten days scarcely a trace of the operation was visible.

Examination of Tumor.—The tumor measured two and one-quarter inches in its long axis, and two and seven-eighths inches at its widest circumference. It was smooth, somewhat lobulated, of firm consistence, whitish color when cut into, with yellowish spots scattered over its surface. A microscopic examination made by Dr. E. B. Bronson, pathologist to the Metropolitan Throat Hospital, showed a multitude of small cells, distinctly nucleated, mostly of an oval shape, with here and there a few spindle-shaped ones, with long processes; fibrous tissue appears sparingly. The cells were mostly adhering together without intervening substance. Fat-cells occur in abundance, some of which are partly filled with cell-growths.

Remarks.—The above case is interesting chiefly on account of the rarity of this class of tumors. Cohen, in his excellent treatise on "Diseases of the Throat," gives a translation from the French of an article on adenomas of the palate, "on account of its interest and the want of other material to illustrate the subject." The article contains a detailed account of two cases; the larger of the tumors measured six

centimetres (two inches) in its long axis. A single straight incision for its removal was made along its great axis. In the other case, "a double incision, comprising an elliptical flap." In both cases the tumors broke into fragments under the digital pressure necessary for their removal.

In Gibbs's work on "Diseases of the Throat" mention is made of four cases of a somewhat similar character as having occurred in the practice of Prof. Syme. I was unable to procure a copy of the London *Lancet* in which they are reported.

At the present time, three and a half months since the operation, the case continues well, with no symptoms of a recurrence of the growth (*Plate 2*).

CASE II. *Laryngeal Growths. Plate 3.*—G. S., aged thirty-one, native of Ireland, occupation laborer, sent me for treatment by Dr. J. H. Pooley, of Yonkers, September 18, 1873.

He stated that hoarseness had begun about four years ago. During the past six months it had increased, and, at the time of reporting to me, he was quite aphonic. On laryngoscopic examination, two papillomatous growths were seen, the larger covering the right vocal cord for nearly two-thirds its length, a portion of which was attached by pedicle to the right ventricular band; a smaller growth occupied the middle third of the left vocal cord.

The operation was performed after three days' preliminary training, and completed at one sitting. A small portion of the pedicle by which the tumor was attached to the right ventricular band, and also part of the growth on the left vocal cord, were left for a subsequent operation, in consequence of the hæmorrhage which ensued.

The patient was permitted to return to Yonkers, but instructed to visit me again at the expiration of ten days, at which time all trace of the growths had disappeared. Mackenzie's forceps were employed in the operation. Drs. J. H. Pooley, of Yonkers, de Brémon, Lefferts, and T. R. Pooley, were present.

The case was presented to the New York Laryngological Society three and a half months after the operation, voice perfect, and no return of the growths.

CASE III. *Plate 4.*—H. J., aged thirty-eight, native of Germany, occupation merchant, has suffered from hoarseness for two years, at times scarcely able to speak above a whisper. A laryngoscopic examination showed a papillomatous growth, on the right vocal cord, about the size of a large pea, and extending from the floor of the ventricle to the free edge of the cord, over which it projected, preventing approximation.

This patient's larynx was very narrow, and extremely sensitive to the introduction of instruments. The entire growth was removed after several trials, excepting a portion about the size of a pin's-head. Operation performed early in August. As the voice had greatly improved, I deemed further operative interference unadvisable. The patient was discharged, with instructions to visit me from time to time. I last saw him about the middle of January; voice clear and strong; remains of the growth scarcely visible; operation performed with Mackenzie's forceps.

The case was seen by Drs. Asch, Lefferts, Jones of St. Louis, John Moore, United States Army, and others.

CASE IV. *Plate 5.*—Sarah R., aged twenty-one, native of New York, consulted me, April 20th, for hoarseness of several years' standing. An examination with the laryngoscope discovered a small sessile nodule on each cord near the anterior commissure, and apparently thoroughly incorporated with the fibrous tissue; the cords were flabby and relaxed, and did not approximate upon phonation.

The treatment consisted in the local application of solution of argent. nit., ferri perchlor., cupri sulph., etc., and from time to time touching with argent. nit. fused on a platinum rod.

After six months' almost continuous treatment, there seemed scarcely any diminution in the size of the nodules, but the cords had recovered to a great degree their tonicity; approximation more perfect, and voice greatly improved.

Mackenzie reports several similar cases in his work on "Laryngeal Growths," but speaks discouragingly of the success of treatment.

Cohen, in his treatise on "Diseases of the Throat," mentions a case which he cured after *two* years' treatment by application of argent. nit. fused on platinum.

CASE V. *Plate 6. Phlebectasis Laryngea.*—Mary B., aged twenty-six, a native of Ireland, tall and of spare habit, anæmic, and of a very broken-down appearance, consulted me, March 13, 1873, for a peculiar sounding, harsh, dry cough of several years' standing, accompanied with an uneasy, tickling sensation in the throat, and slight hoarseness. A laryngoscopic examination showed a very anæmic condition of the mucous membrane of the larynx; along the lower border of the ventricles I observed a dark streak, which, upon a closer inspection, proved to be a number of small veins; several more were also observed distributed over the ventricular bands and arytenoid cartilages.

There was no history of sudden strain or injury to the larynx, nor other evidence of local trouble. Auscultation revealed nothing, but her general appearance was that of one "affected with a morbid preponderance of the venous system." The treatment consisted in the daily application of the glycerat. acid. tannic. to the congested parts, and the internal administration of tinct. ferri gtt. xl, three times daily, as a tonic. The local treatment was persevered in for several weeks, when she was compelled to leave the city. The iron was continued for a much longer period.

Seven months afterward she again visited me. During this period she had gained in flesh and strength, cough greatly improved, mucous membrane of the larynx of a normal color, and the venous congestion removed, excepting a slight trace in the ventricles.

Mackenzie was the first to describe this affection.¹ He speaks of it as very rare, and says it may depend on general or local causes, and is most likely to predispose to passive œdema.

I am indebted to my colleague, Dr. George M. Lefferts, of the Metropolitan Throat Hospital, for the excellent drawings from which the accompanying plates have been taken.

¹ London *Lancet*, July 6, 1862.

II.—*An Extraordinary Case of Poisoning by Morphia; Recovery.* By GEORGE M. SCHWEIG, M. D., New York.

On the 6th of January, 1874, at about 6.30 o'clock P. M., I was sent for to see a gentleman who was said to be dying. On arriving at his residence, some five minutes later, I found there Dr. P. J. Lynch, from whom I ascertained the following facts: At half-past four o'clock that afternoon, the patient, a healthy, robust gentleman, weighing about two hundred pounds, about forty years of age, had taken seven grains of sulphate of morphia, in the form of three and a half drachms of Magendie's solution, freshly obtained that day from the druggist. He had partaken of nothing since breakfast, and the poison must therefore have been rapidly taken up, and conveyed into the circulation by the veins of the stomach. He was discovered, at a quarter-past five o'clock, in a state of profound narcosis, by his wife, who at once administered a tablespoonful of powdered mustard, without, however, obtaining an emetic effect. Dr. Lynch arrived a little before six o'clock. Two scruples of sulphate of zinc administered by him had produced very slight emesis. When I saw the patient, he exhibited all the symptoms of the most complete opium-intoxication. The pupil was of a minimum size, the face cyanotic, eyes imperfectly closed, skin very moist, muscular prostration complete; pulse ranging from 140 to 160, extremely non-resistant, feeble, fluttering; respiration indiscernible, thoracic respiration being apparently entirely suspended. Flagellation, pinching, etc., failed to elicit signs of cognition from the patient. Reflex irritability appeared entirely gone; the finger, and subsequently a feather, applied to the fauces and upper portion of the oesophagus, failed to call forth any reflex action whatever. At this time the patient was being dragged up and down the room by two attendants. Dr. Lynch had already sent for a solution of atropia (gr. j ad ʒss), of which we at once injected ten minims in the arm, and, half an hour after, four minims more. I may as well state here, that the only visible effect of the atropia was a very slight and very transient dilatation of the pupil. Dr. Lynch agreed with me

in thinking it useless to employ the stomach-pump, as the history of the case, as well as the condition of the patient, rendered it almost certain that the poison had all been absorbed. My first step was to procure from my office a faradic battery, the instrument in question being a No. 4 (double cell) of the Galvano-Faradic Manufacturing Co.'s make. The electrodes I used at first were small, sponge-covered carbon-points; later I replaced these by small metal disks. I commenced to use the instrument at about a quarter to seven o'clock. Putting the battery at the full strength obtainable from one cell, I began by applying one pole over the medulla, the other alternately to the spine, the thoracic muscles, and epigastrium. By all this I got no reaction whatever. I then passed the current from over the medulla to the left pneumogastric in the neck; this caused a slight twitching. I next applied the two poles simultaneously to the phrenic nerves, and was rewarded by an instantaneous and powerful passive respiratory movement. I say *passive*, because the respiratory muscles (with the exception of the diaphragm) took no part in it; the application to the nervi phrenici produced an energetic contraction of the diaphragm, and, as a sequence, a very audible and full inspiration. The moment this took place, I instantly broke the circuit, the diaphragm as instantly relaxed, and a proportionate expiration took place. This artificial respiration I continued for a few minutes, and had recourse to it occasionally during the rest of the evening. About seven o'clock Dr. John Gallaher came in and took an active part in the treatment. About eight o'clock the coma had become more profound, and the patient ceased to react to the current. I then had recourse to the connecting rod, by means of which the two cells of the battery are connected, and a current of double intensity is obtained. This also I used at full strength. Any one familiar with the battery in question can appreciate the force of the current thus obtained; it is terrific, that from only one cell even being sufficient to prostrate a healthy individual. I used this steadily, on almost every part of the body, until after midnight, when the symptoms had relaxed somewhat, the pupil had returned to about one-half its normal size, and

other means were found adequate to keep the patient from sleeping. Large quantities of strong coffee had been administered during the evening, and about ten o'clock the patient began to vomit, and continued to do so from time to time during the remainder of the evening, and, as I ascertained next morning, also after I left. Faradization of the pneumogastries appeared very effective in inducing and encouraging emesis. Liquor ammoniæ, administered at short intervals in ten-drop doses, acted very promptly and efficiently on the pulse, which increased in force almost immediately after each dose. About 1.30 o'clock A. M., Dr. Lynch and I considered the patient out of danger, and, after relieving the bladder of a little urine, we left, leaving word not to let the patient sleep until about four o'clock.

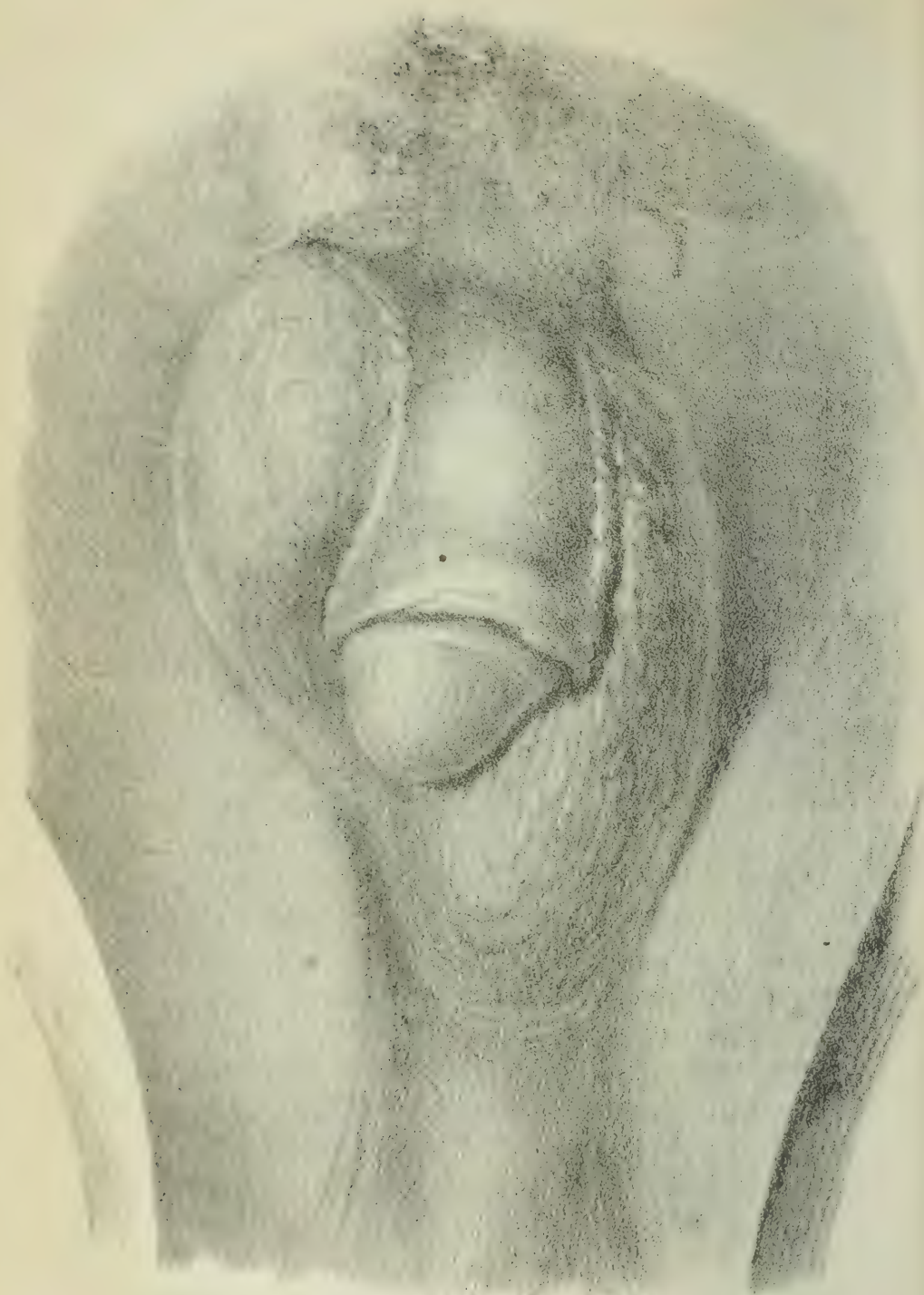
January 7th, A. M.—I found the patient weak, rather befogged, morose, and with sensation not yet fully returned. I prescribed a tonic mixture containing quinia.

7th, P. M.—Sensation had returned; patient told me that he felt sore all over, as though some one had beaten and pounded him with a wooden mallet; this was no doubt owing to the violent muscular contractions produced by the electrization the preceding evening.

8th, A. M.—Patient much better; appetite returning.

9th.—All functions normal; completely recovered.

As the result of my observations in this case I would state that the localities where the patient appeared most susceptible to the influence of the current were—the carotid tract, stylo-mastoid region, temples, and epigastrium. Had the constant current been employed, the medulla would no doubt have proved a very sensitive centre, but was not so in the case under consideration. I also wish to draw attention to the necessity of having more than one battery available in similar cases. About two hours from the time when I commenced to use it, my battery, probably from polarization of the carbons, temporarily ceased to act; fortunately I was able to obtain a similar one from a medical friend of mine in the neighborhood, which served me one and a half hour, when my own had recovered. Had I been unable to procure another instrument, the patient would probably have succumbed



Geo. C. Wright - 71th.

DR. WEIR'S CASE OF CURVATURE OF THE PENIS.

about nine o'clock, when he had an intense attack of cerebral congestion, with the face highly cyanotic, the temporal veins turgescient, and the stupor for the time being so profound that for about half a minute he ceased entirely to respond to the current. During this time I sent the current (with the borrowed battery) steadily from the seventh cervical vertebra first to one, then to the other cervical sympathetic, with the result of rapidly relieving the cerebral congestion. But for the second battery, all our previous labor had been fruitless.

III.—*Two Cases of Congenital Curvature of the Penis, with Hypospadias and Adhesion to the Scrotum; successfully relieved by Operation.* By R. F. WEIR, M. D., Surgeon to the Roosevelt and St. Luke's Hospitals, etc.

In the following cases there existed a triple malformation, hypospadias, curvature of the penis, and adhesion to the scrotum. The rarity of the two latter conditions, which are generally, if not always, associated with hypospadias, may be judged from the fact that Guyon, in his excellent work on the "Malformations of the Male Urethra,"¹ has collected but four cases: one, on the authority of J. L. Petit, where curvature and adhesion were conjoined, and in which the penis was separated by operation from the scrotum, but the curvature remained; two others (Buisson,² and Dupont³), where adhesion only existed, and in which liberation was easily effected by division of the frænum-like band; and a fourth (Buisson⁴) where curvature only existed, and which is quoted by Guyon to show the superiority of the method used in that and in the present cases over that suggested by Petit, who advised making a series of minute incisions in the contracted urethral band.

Buisson, however, remarks that he has seen several similar cases, but gives no particulars. In Petit's own works,⁵

¹ "Vices de Conformation de l'Urèthre chez l'Homme," 1863.

² Buisson, "Traitement de l'Hypospadias," p. 536.

³ Dupont, "Moniteur des Hôpitaux," February 4, 1853.

⁴ Buisson, *op. cit.*

⁵ "Œuvres complètes," edition 1837, p. 715.

however, besides the case alluded to above, where he did not operate himself, believing the case to be irremediable, is mentioned the *post-mortem* examination of a youth of ten or eleven years of age, afflicted with curvature of the penis and scrotal adhesions, whose case had been pronounced by him some time previously as being beyond the reach of surgical skill.

The quaintness and interest of his description render it well worthy of translation. He says: "I first exposed one of the corpora cavernosa, opened it and passed into it a tube through which I forced in air, and the penis enlarged and curved downward; to retain this shape, I applied a ligature by which I kept in the air; then I dissected the penis, and found that the whole urethra was very short, that it was, so to speak, ligamentous and incapable of being extended, having no cellular tissue. I separated it from the two corpora cavernosa very carefully, but with great difficulty; in spite of the separation, the corpora cavernosa lengthened only a very little, and the penis remained curved, which made me judge that the malformation of the urethra was not the cause of the curvature, and that the under part of the corpora cavernosa had some part in it. To examine it at leisure, I took the parts home with me, and, having separated the corpora cavernosa from the other tissues, I noticed that, on taking hold of them at each end, I could not stretch them out, and, on inflating them anew by the opening first made, they resumed the curved position, which I then attributed to a ligamentous band, which remained in the place whence I had removed the urethra. I cut off from this strip all that was possible without opening the corpora cavernosa, and I even cut transversely each of the fibres that I could not dissect off. In spite of this and all the air that I could force in, the corpora cavernosa preserved always the same curve. Having distended them for the last time, I retained the air by a ligature, and put them away to dry. Some time afterward I cut them, one longitudinally, the other transversely, and I perceived that their cells were nearly obliterated in the concave part of the curvature, and that by degrees they enlarged toward the convex part of the penis where they were the largest, either be-

cause they were originally so formed, or that, having been always compressed by the urethra and ligamentous band, they had remained small, not having the power of enlarging like the others."

To show that Petit did not carry his experimentation sufficiently far to develop practical results, I present a summary of Buisson's operation in the case of curvature alluded to above. After describing the case, etc., he continues: "A fold of skin belonging to the inferior face of the penis was pierced valvularly by the point of a lancet and a tenotomy-knife introduced through the opening, so as to press its edge against the inferior surface of the penis, previously raised against the pubis. The pressure of the instrument, aided by a slight transverse movement, divided the fibrous envelope of the corpora cavernosa nearly in the middle of the space between the glans and the abnormal opening of the urethra. A slight sound, comparable to that resulting from the tissues divided in tenotomy, was heard, and the penis lengthened visibly. Nevertheless a deeper resistance was felt. I then directed the point of the knife upward toward the dorsum of the penis, so as to penetrate between the corpora cavernosa, and, turning its edge toward the septum, divided this completely, and the restoration of the organ immediately became perfect."

This excellent result, as well as that obtained in the two following cases, disproves partially the doctrine of Roubaud,¹ who speaks of the incurability of this malformation, and calls the impotency with which it is associated absolute.

CASE I.—Isaac B., aged twenty-one years, was admitted into St. Luke's Hospital January 4, 1871 (service of Dr. Weir), with the following congenital malformation of the penis, the other genito-urinary organs being normal: The penis was strongly curved downward, so that the glans presented at the base of the scrotum, and was apparently held there by the integument of the scrotum being continued over the dorsum of the penis, a *raphé* on each side marking the junction of the parts, and forming at the glans the free superior portion of the prepuce (*see* plate). The glans was uncovered and the

¹ "Traité d'Impuissance et de la Stérilité," 1855, p. 167.

urethra hypospadiac, and opening about half an inch from the site of the meatus, from which place it could be traced into the perinaeum as a short, tense band acting as the cord to the are formed by the penis. This was demonstrated to be the urethra, and of normal diameter, by the passage of a No. 14 English sound. The patient passed urine between the thighs, although, by raising the partially movable glans, he was enabled to throw the jet forward, and thus avoid wetting himself. He contemplated marriage, and therefore asked for surgical relief. It was explained to him that, in the event of liberating the penis, the opening of the urethra would necessarily be carried farther back, and even might seriously interfere with procreation. Desiring the operation performed, he was on the 9th of January etherized, and an incision made on each side of the scrotum sufficiently far from the body of the penis to afford skin enough to cover the under surface when released, and the flaps dissected up to the penis. This constituted the first step of the operation; the second consisted in separating the urethra, with the corpus spongiosum, from the corpora cavernosa as far back as the posterior margin of the scrotum. This required but few cuts of the scissors, as the band was only about one and half inch long, and produced no effect upon the curvature of the penis. On stretching out the curved organ, the septum between the corpora cavernosa could be easily felt as a tense, thickened band, and its division constituted the third step in the operation. It was accomplished by a tenotomy-knife, introduced, however, not so far as described by Buisson, and cutting freely the septum in its lower part and about half-way between the glans and scrotum. Immediately after this section was made, the curve was readily abolished and the deformity thoroughly overcome. The transverse incision made involved, however, the tissues of both corpora cavernosa, and gave rise to troublesome and persistent oozing of blood, only arrested by a ligature placed around an acupuncture-needle. The skin-flaps were then united by a suture on the under surface of the penis, and the gaping edges of the scrotal wound brought together without tension; having, however, first carefully secured the mucous membrane of the urethra by fine sutures to the integument at

the posterior angle of the wound, that is to say, at the junction of the scrotum with the perinæum. The penis was laid against the abdomen, without need of a retaining bandage, and cold-water dressings were applied to the parts.

The result of the case was exceedingly satisfactory, though at the situation of the needle there was tardy reparative action, not only from the presence of the ligature applied, but also from the frequent erections that ensued, enjoyed by the patient in spite of the pain therefrom.

January 17th.—A small abscess appeared in the perinæum, running toward right nates, and caused by a pocket at the end of the wound. It was relieved by incision.

February 4th.—The wound had healed and the patient at his request was discharged from the hospital. At that time the penis, though not normally straight, was nearly so, and completely so, he informed me, when in a state of erection; and, when he subsequently called at my office, several months later, he expressed himself as being very well satisfied with the result, and that, too, in spite of the inconvenience of having to freely open his dress in order to urinate; the jet, however, was thrown decidedly forward when the scrotum was lifted up.

The second case was very similar.

CASE II.—In August, 1870, I was asked by Dr. Orton, of this city, to see in consultation with him a young gentleman of about twenty-three years of age, who desired to marry, and whose condition clearly resembled the one narrated above. In him, however, the penis was free, having in early life been released by incisions apparently made on each side of the organ, the cicatrices of which were plainly to be seen. But there was a difference between this gentleman's condition and that of Isaac B., in that the opening of the urethra was congenitally in the perinæum just behind the scrotum, and that no trace of the canal and corpus spongiosum was to be found anterior to this point. The other external genital organs were perfect. The penis was well developed and curved downward very much, and, on stretching it upward toward the abdomen, the resisting part was recognized to be in the situation of the septum. It was decided to divide this

subcutaneously, which was done by Dr. Orton, and the penis elongated sensibly. I was afterward told that the operation had successfully overcome the difficulty, and that the marriage was consummated.

Proceedings of Societies.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Annual Meeting.

FIRST DAY—MORNING SESSION.

THE Society met pursuant to statute, in the Common Council Chamber, City Hall, Albany, February 3, 1874. Dr. E. M. Moore, of Rochester, called the meeting to order. Rev. Dr. James opened the meeting with prayer.

THE PRESIDENT then read his inaugural address, the amendment of the fundamental laws of the Society forming the general subject of the paper. The following committees were then appointed:

On Credentials—Drs. Charles E. Rider, Robert Newman, G. L. Halsey.

On Arrangements and Receptions—Drs. J. V. P. Quackenbush, William H. Bailey, W. S. Ely.

Business Committee—Drs. S. O. Vanderpoel, H. D. Didama, Harvey Jewett.

On Ethics—Drs. Thomas Hun, E. R. Squibb, D. B. St. John Roosa.

Dr. JOHN G. ADAMS, of New York, moved that a committee of three be appointed to take into consideration the suggestions and recommendations in the President's address. Adopted.

The Secretary read the following report of Dr. Samuel Hart, of Brooklyn, as delegate to the Rhode Island State Medical Society:

To the Medical Society of the State of New York.

Agreeably to your appointment, I attended the annual meeting of the Medical Society of the State of Rhode Island, as your delegate, on the

11th of June last. I was kindly received. It was a meeting for the annual business of the Society, which being accomplished, the Society dined together and adjourned.

Dr. S. O. VANDERPOEL read a paper "On Transmission of Yellow Fever and Cholera in their Relations to Quarantine."

Dr. SQUIBB moved that, as this paper was a continuation of one read before the Academy of Medicine of New York, the latter, with due credit, be included with this in the printed transactions. Carried.

The paper was discussed by Drs. A. N. Bell, Ernst Krackowizer, J. C. Hutchison, B. F. Sherman, and A. S. Wolff.

Dr. QUACKENBUSH, chairman of the Committee on Receptions, introduced Dr. William G. Wheeler, of Chelsea, Massachusetts, delegate from the Massachusetts State Medical Society; also Dr. A. P. Snow, of Winthrop, Maine, delegate from the Maine State Medical Society. Both responded pleasantly to their introductions.

The following papers were read by title, and referred to the Publishing Committee: "Bromide of Potassium for Nausea and Vomiting in Pregnancy," by S. Caro, M. D., of New York City; also "Epistaxis and the Sulphate of Quinine," by the same gentleman.

Dr. W. G. WHEELER read a paper entitled "A Case of Fibroid Tumor of the Uterus." Referred to the Publishing Committee.

Dr. WILLIAM C. WEY presented, in behalf of Dr. T. H. Squire, of Elmira, a paper entitled "The Prostate Vertebreated Catheter," merely reading the author's abstract of the conclusions reached, including the principles involved in the use and construction of the instrument.

Dr. VANDERPOEL also read by title a case presented by Dr. Wey, of Elmira, entitled "A Case of Acute Dilatation of the Stomach." Both papers were referred to the Publishing Committee.

Dr. VANDERPOEL moved that an evening session be held, to commence at 7.30 o'clock, and that it be devoted to the report and discussion of the report of the Committee on Hygiene. Carried.

Dr. A. N. BELL, chairman of that committee, announced

that the subject of the report would be "Defective Drainage."

On motion, the Society then adjourned, to meet at 3 P. M.

AFTERNOON SESSION.

The Society convened at 3 P. M., Dr. MOORE, President, in the chair.

Dr. W. M. CHAMBERLAIN, of New York, read a paper entitled "Remarks upon the Application of Hydrostatic Laws to Therapeutics," illustrating it by appropriate apparatus.

Dr. VANDERPOEL presented communications from the Medical Society of the County of New York and from the Alleghany County Medical Society. They were referred to the Committee on the President's Address.

Dr. JAMES P. WHITE, of Buffalo, read a paper entitled "Report of Two Cases of Chronic Inversion of the Uterus successfully reduced."

Drs. QUACKENBUSH, GRAVES, and TEN EYCK, discussed the paper.

The chairman of the Business Committee read, by title, a paper upon "A Plea for Old Physic," by Dr. William B. Sprague, President of the Genesee County Medical Society, this being his annual address before that Society.

Dr. QUACKENBUSH, from the Committee on Receptions, introduced Dr. E. B. Stevens, delegate from the Ohio State Medical Society; also Dr. Alfred Hosmer, delegate from the Massachusetts State Medical Society; also Dr. R. M. Fowler, delegate from the Connecticut State Medical Society. All responded to their introductions.

Dr. C. A. ROBERTSON read a paper entitled "Diagnosis in Eye Cases."

The chairman of the Business Committee read, by title, a paper by Dr. John G. Adams on the "Life and Character of Alexander H. Stephens, M. D."

Dr. Low moved that a committee of three be appointed to invite physicians who are members of the Legislature to participate in the deliberations. Carried.

Dr. VANDERPOEL moved that the morning session to-morrow convene at 9.30 o'clock. Carried.

The PRESIDENT announced the following as the Nominating Committee :

First District, C. R. Agnew, M. D. ; second, Solomon Van Etten, M. D. ; third, G. H. Hubbard, M. D. ; fourth, Z. P. Bridges, M. D. ; fifth, Edwin Hutchinson, M. D. ; sixth, William C. Wey, M. D. ; seventh, E. W. Bottum, M. D. ; eighth, H. W. Dean, M. D.

On motion, the Society adjourned, to meet again in the evening at 7.30 o'clock.

EVENING SESSION.

The Society met at 7.30 P. M., and was called to order by Dr. BURDICK, the Vice-President.

Dr. A. N. BELL read his report as chairman of the Committee on Hygiene, and the reports of the committees of the counties of Tioga, Tompkins, and Kings. At Dr. Bell's request, Dr. Moreau Morris, chairman of the Committee on Hygiene of the County of New York, read their report "On Drainage." General Viele, from New York, was then introduced, and spoke at length on the same subject in a very interesting address. Dr. Wolcott, from Utica, read a report on Hygiene from Oneida County. Dr. Guernsey, of Dutchess, Dr. C. R. Agnew, of New York, Dr. John P. Gray, of Oneida, and Dr. Snyder, of Montgomery, spoke on the subject.

Dr. WEY moved that the thanks of the Society be tendered to General Viele for his valuable and eminently practical address. Carried.

The following were appointed a committee on the President's inaugural address : Drs. Thomas Hun, John P. Gray, and James P. White ; and Drs. Low, Vosburgh, and Hovey, a committee to invite the medical members of the Legislature.

Dr. MOORE, Dr. SHERMAN, Dr. A. N. BELL, and Dr. MORRIS, spoke further on the subject.

On motion, the Society adjourned until 9.30 o'clock in the morning.

SECOND DAY--MORNING SESSION.

The Society met at half-past nine, and was called to order by the President, Dr. E. M. Moore.

Prayer was offered by Rev. Henry Darling, D. D.

The minutes of the sessions of Tuesday were read and approved.

The chairman of the Business Committee presented a report of the Committee on Hygiene of Richmond County. It was referred to the Committee on Hygiene.

Dr. H. KNAPP read a paper on "Pathology of Intraocular Tumors," with microscopic demonstrations. Drs. Noyes, Graves, and Rider, discussed the paper.

Dr. VANDERPOEL also read, by title, the following: "Hæmoptysis," by Dr. Leaming, of New York; "Report as delegate to the Pennsylvania State Medical Society," by Dr. Caro, and "A Brief and Partial *Résumé* of the Medical Society of the State of New York," by Dr. D. P. Bissell, of Utica. All were referred to the Publishing Committee.

Dr. JOHN P. GRAY read a paper on "The Pathology of Insanity," exhibiting some photo-micrographs, comparing healthy and diseased brain-tissue.

Dr. D. B. ST. JOHN ROOSA made a verbal extract from a paper entitled "The relations of Syphilis to Aural Disease."

Dr. E. R. SQUIBB read a paper on "Ergot and its Preparations."

Dr. J. MARION SIMS moved that the paper of Dr. Squibb be published in the Transactions of the Society. Dr. J. P. White remarked that this was the usual course of papers. Dr. Squibb said that, inasmuch as it had already been presented before a public society, it would naturally be an exception to the usual disposal of papers. However, it would be printed in a pamphlet, with other papers, and within a month would probably be placed before each member of the Society.

The Secretary then read the following notice: "Dr. John Swinburne requests the pleasure of the company of this Society, permanent and honorary members, delegates and invited guests, at an entertainment at the Delavan House this evening, immediately after the President's address."

Dr. J. V. P. QUACKENBUSH, chairman of the Committee on Publication, read the following report:

"The Committee on Publication would respectfully report

that, for the first time within their memory, the Legislature has refused to make appropriation for the publication of our Transactions. This placed the committee in a position in which it was delicate to act, and the question naturally presented itself, "Shall we initiate a new mode of publishing our Transactions, or shall we leave that to the action of the Society?" We concluded to be guided by the Society and carry out their directions. We would state, further, that the county societies of New York, Monroe, and some others, have lately offered to pay their proportions of the expense of publication."

Dr. GEORGE M. BEARD read a paper entitled "A New Method of treating Malignant Tumors, by electrolyzing the Base."

Dr. ROBERT NEWMAN read a paper on "Electrolysis in the Treatment of Strictures of the Urethra." Both gentlemen exhibited instruments in illustration of their subjects.

Dr. E. H. PARKER read a paper on "Sleeping Doctors," at the close of which the Society adjourned until 3 P. M.

AFTERNOON SESSION.

The Society convened again at 3 P. M., agreeably to adjournment. Dr. Moore, President, in the chair. Dr. Abram Jacobi read a paper entitled "Embryological Demonstrations."

Dr. J. MARION SIMS read a paper on "Fibroid Tumors of the Uterus." Dr. Graves made a few remarks following the paper.

Dr. VANDERPOEL presented, by title, a "Biographical Sketch of Dr. R. S. Allen, of Saratoga," by Dr. F. B. Reynolds. It was referred to the Committee on Publication.

Dr. ERNST KRACKOWIZER read a paper on "Perineal Lithotripsy."

The PRESIDENT announced the following as the committee on Hygiene: Drs. A. N. Bell, Chairman, Brooklyn; S. O. Vanderpoel, Quarantine; H. D. Didama, Syracuse; H. W. Dean, Rochester; Stephen Smith, New York; C. R. Agnew, New York; B. A. Segur, Brooklyn.

Dr. ELLSWORTH ELIOT offered the following:

Resolved, That the Committee on Hygiene have power to secure such legislation as in their judgment may be necessary for the promotion of the public health. Carried.

Dr. COTES, of Batavia, read a paper on "Urethrocele."

Dr. GEORGE T. STEVENS, of Albany, read a paper on "The Relation of Cardiac Diseases to Diseases of the Eye and Ear."

Dr. KENDALL, of Baldwinsville, asked leave to take from the table the following resolution, which he presented last year, of which he moved the adoption :

Resolved, That the By-Laws of this Society be altered, so that section eleven, of paragraph three, shall read as follows: At the annual meeting, at the close of the morning of the first day, the members of the Society shall be organized into eight committees, by senatorial districts, as established by the laws of 1836, the members present from each district constituting one committee, each of which shall elect one member. The members thus elected, with one appointed by the President as chairman, shall constitute the committee on nominations.

This was discussed by Drs. Squibb, Corliss, and Eliot.

Dr. HUTCHISON moved that the subject be indefinitely postponed. Carried.

Dr. DIDAMA, of the Business Committee, announced the hour for the morning session to be half-past nine o'clock.

On motion, the Society adjourned, to meet at 8 P. M., to hear the President's address in the Assembly-chamber.

EVENING SESSION.

The Society met in the Assembly-chamber at 8 P. M. The meeting was called to order by the Vice-President, Dr. Burdick. The President, Dr. E. M. Moore, then delivered his annual address.

At the close of the President's address, the Society proceeded to the Delavan House, where they were received and hospitably entertained by Dr. John Swinburne. No speeches were indulged in, the affair being eminently social.

THIRD DAY—MORNING SESSION.

The Society met at 9.30 A. M., and was called to order by the Vice-President, Dr. Burdick.

Prayer was offered by the Rev. Dr. Magee.

Dr. JOHN P. GRAY, chairman of the committee "On the President's Address," reported that they have carefully read and considered the several matters treated of, in the interesting address of the President :

1. As to Legislation :

The President has fully and clearly set forth the past history and present relations of the Society to the State, under successive legislative enactments, and shown that the subject is one of great importance to this Society, and to the medical profession. His admirable and perspicuous *résumé* places the subject before the Society in a light demanding attention and action. Your committee have also considered other papers on this topic, referred to them by the Society.

The matters involved are of such moment that they require more time and deliberation than can be comprised in a brief session of the Society. They would, therefore, recommend the appointment of a committee to examine the laws, and report to the next meeting of the Society what modifications, if any, are necessary touching the incorporation and organization of the State and county medical societies, and all other matters of legislation pertaining thereto.

2. As to the publication of Transactions :

Your committee have considered the matter of publication of Transactions of the Society, discussed in the President's address, taking into consideration also the several communications of county societies and individual members addressed to the President and Secretary, and placed in the hands of your committee. They would recommend, therefore, that State aid be not further invoked for the publication of the Transactions, and that this Society publish its own transactions, and that the expense of the same be met by a system of assessments on permanent members and county societies; that all existing permanent members be requested to pay annually to the Treasurer of the State Society the sum of three dollars, and that all permanent members, hereafter elected, be required to pay yearly the same amount, which payment shall entitle them to a copy of the Transactions.

That each county society, at any meeting before the annual meeting of the State Society, shall assess the members in a sum not less than one and a half dollar, which amount the treasurer of each county society shall remit to the Treasurer of the State Society on or before the 1st day of February, which shall entitle the several county societies to one copy of the Transactions for each one and a half dollar remitted.

Further, That all the funds thus received by the State Society shall be appropriated to the publication of the Transactions, and to the necessary expenses of the Society.

Further, That the Committee on Publication shall publish so many of the Transactions¹ as may be necessary, and in such manner as may be deemed most advantageous to the interests of the Society.

All of which is respectfully submitted :

THOMAS HUN,
JOHN P. GRAY,
JAMES P. WHITE.

The report was accepted and adopted.

Dr. JOHN P. GRAY then presented the following resolutions :

1. *Resolved*, That the Secretary be instructed to have the report of the Committee on Hygiene, and the discussion thereon, printed as soon as practicable, and sent to every county medical society in the State as a communication from this Society.

2. *Resolved*, That the Secretary be instructed to urge upon the county societies the importance of having committees on hygiene in coöperation with the standing Committee on Hygiene of the State Society, and that the investigations of the county committees in this regard, on the approval of the respective county societies having such committees, be forwarded to the Committee on Hygiene of the State Society, in order to be summarized by that committee in their annual report.

Adopted.

Dr. E. R. SQUIBB offered a preamble and resolutions indorsing the action of the American Medical Association in regard to the rank and pay of the army medical corps. Adopted.

Dr. VANDERPOEL read by title the following papers : "A Case of Tetanus after Miscarriage, successfully treated by Hydrate of Chloral," by Dr. J. V. Kendall ; and "A Case of True Bony Ankylosis of the Left Side of the Lower Jaw, successfully treated by a Surgical Operation," with remarks, by Dr. James L. Little, of New York. Both were referred to the Committee on Publication.

Dr. VAN DERVEER, of Albany, read a paper "On Penetrating Gunshot-Wounds of Cranium," exhibiting a case.

¹ Not less than 1,200 copies.

Dr. McFARLAND read a paper "On Adjustable Dressings for Fractures."

Both papers referred.

Dr. MOREAU MORRIS presented a fact falling under his observation, in illustration of a remark of the President in his address last evening, that the average time required for an American to bolt his dinner was about six minutes, to the effect that at the hotel this morning he noted that a gentleman disposed of a full breakfast in two minutes and ten seconds, which is much below the average given by the President.

Dr. H. W. DEAN reported, on the part of the Committee on Prize Essays, that but one essay had been presented for the Merrit H. Cash prize, and, being a paper of merit, they recommended that the prize should be awarded to it.

The paper was on the subject of "Colles's Fracture," and was presented under the motto, "Die Hoffnung eines armen bedürftigen Teufel" (translated by Dr. Jacobi, "The Hope of a Poor Indigent Devil"), the author being Thomas K. Cruse, of Tarrytown, N. Y.

The committee recommended for the subject of prize essays, "School Hygiene in Reference to the Physiological Relations of Age and Sex to Mental and Physical Education."

They also solicited essays for the Brinsmade prize upon any physiological, therapeutic, or pathological subject, at the choice of the competitor.

Dr. C. H. PORTER, Treasurer, made his report, which was received and adopted, being audited by a committee composed of Drs. Quackenbush, James S. Bailey, and Jenkins, who reported having found it correct.

Dr. WILLIAM C. WEY reported, on the part of the committee to whom was referred the duty of recommending to the Regents of the University of the State of New York a list of Examiners in Medicine in accordance with the law of 1872, the following as such committee: Drs. E. M. Moore, Rochester; Alonzo Clark, New York; Ernst Krackowizer, New York; John P. Gray, Utica; S. O. Vanderpoel, Quarantine; Edward R. Squibb, Brooklyn; John Ordronaux, Roslyn; Abram Jacobi, New York; Thomas Hun, Albany—the com-

mittee to have power to fill all vacancies in their number. The report was adopted.

Dr. WILLIAM C. WEY, secretary of the Committee on Nominations, presented, on behalf of that committee, the following as officers, etc., for the ensuing year:

For President—Dr. George J. Fisher, Sing Sing.

For Vice-President—Dr. Harvey Jewett, Canandaigua.

For Secretary—Dr. William H. Bailey, Albany.

For Treasurer—Dr. Charles H. Porter, Albany.

FOR CENSORS.

Southern District—Drs. Edward R. Squibb, Brooklyn; Edward H. Parker, Poughkeepsie; Ellsworth Eliot, New York.

Eastern District—Drs. Henry B. Whiton, Troy; James L. Babcock, Albany; John P. Sharer, Little Falls.

Middle District—Drs. M. M. Bagg, Utica; Wilson D. Bassett, Cooperstown; C. G. Bacon, Fulton.

Western District—L. B. Cotes, Batavia; Harvey Jewett, Canandaigua; Caleb Green, Homer.

COMMITTEE ON CORRESPONDENCE.

First District—Dr. Thomas Addis Emmet, New York.

Second District—Dr. William P. Townsend, Goshen.

Third District—Dr. Henry B. Whiton, Troy.

Fourth District—Dr. Tabor B. Reynolds, Saratoga.

Fifth District—Dr. Samuel G. Walcott, Utica.

Sixth District—Dr. John G. Orton, Binghamton, Chairman.

Seventh District—Dr. Henry B. Wilbur, Syracuse.

Eighth District—Dr. Charles E. Rider, Rochester.

FOR PERMANENT MEMBERS.

First District—Drs. Gurdon Buck, New York; Alexander Hutchins, Brooklyn.

Second District—Drs. Alexander T. Douglas, Rondout; Bradley G. McCabe, Monticello.

Third District—Drs. Alexander McVedder, Schenectady; James S. Bailey, Albany.

Fourth District—Drs. Elisha H. Bridges, Ogdensburg ; Edward S. Walker, Ilion.

Fifth District—Drs. Judson B. Andrews, Utica ; William H. Rice, Phœnix.

Sixth District—Drs. William H. Beardsley, Coventry ; E. C. Moe, Groton.

Seventh District—Drs. James D. Button, Auburn ; Roger W. Pease, Syracuse.

Eighth District—Drs. William B. Sprague, Pavilion ; B. L. Hovey, Rochester.

ELIGIBLE FOR PERMANENT MEMBERSHIP.

First District—None.

Second District—None.

Third District—Drs. Samuel Cross, Cobleskill ; Israel C. Bourne, Masonville ; George P. Salmon, Hudson.

Fourth District—Drs. Asa W. Tupper, North Granville ; Henry Gray, Greenwich.

Fifth District—Drs. Joseph Gardiner, Williamsport ; Hiram G. Dubois, Camden ; F. W. Root, East Hamilton.

Sixth District—Drs. Charles B. Richards, Binghamton ; Judson C. Nelson, Truxton.

Seventh District—Dr. William Oliver, Penn Yan.

Eighth District—Drs. Thomas D. Strong, Westfield ; J. W. Palmer, Victor.

HONORARY MEMBERS.

Drs. J. Matthews Duncan, Edinburgh, Scotland ; Washington L. Atlee, Philadelphia, Pa. ; William Boeck, Christiania, Norway ; Benjamin W. Richardson, London, England ; Joseph W. Brown, United States Army ; Mr. T. Spencer Wells, London, England.

ELIGIBLE FOR ELECTION TO HONORARY MEMBERSHIP.

Drs. Francesco Dichira, Palermo, Italy ; Louis Vecker, Paris, France ; J. M. Da Costa, Philadelphia, Pa.

FOR HONORARY DEGREE OF DOCTOR OF MEDICINE.

Drs. Peter Denny, Dutchess County ; William Newman, New York.

DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION.

Drs. E. M. Moore, Rochester; William Govan, Stony Brook; N. C. Husted, New York; E. C. Bottom, Lyons; C. R. Agnew, New York; Henry B. Whiton, Troy; A. N. Bell, Brooklyn; William C. Wey, Elmira; John G. Orton, Binghamton; Henry W. Dean, Rochester; William S. Ely, Rochester; George H. Hubbard, Lansingburg; Joseph E. West, Utica; S. Oakley Vanderpoel, Quarantine; Henry D. Didama, Syracuse; Frederick Hyde, Cortland Village; J. S. Prout, Brooklyn; M. H. Burton, Troy; James L. Little, New York; John G. Adams, New York; Ellsworth Eliot, New York; Joseph C. Hutchison, Brooklyn; James P. White, Buffalo; H. S. Chubbuck, Elmira; Levi Moore, Albany; B. F. Sherman, Ogdensburg; J. Foster Jenkins, Yonkers; Francis Burdick, Johnstown; R. V. K. Montfort, Orange; Ernst Krackowizer, New York; Edward R. Squibb, Brooklyn; George F. Shrady, New York; Thomas M. Flandreau, Utica; Israel Parsons, Marcellus.

DELEGATES TO THE PENNSYLVANIA STATE MEDICAL SOCIETY.

Drs. Salvatore Caro, New York; Levi Moore, Albany; Solomon Van Etten, Port Jervis.

DELEGATES TO THE OHIO STATE MEDICAL SOCIETY.

Drs. Thomas D. Strong, Westfield; William B. Sprague, Pavilion; Morgan Sugden, Fort Plain.

DELEGATES TO THE RHODE ISLAND STATE MEDICAL SOCIETY.

Drs. J. Marion Sims, New York; Thomas Addis Emmet, New York; Daniel P. Bissell, Utica.

DELEGATES TO THE MAINE MEDICAL ASSOCIATION.

Drs. Hiram Corliss, Greenwich; Luther Guiteau, Trenton.

DELEGATES TO THE MASSACHUSETTS STATE MEDICAL SOCIETY.

Drs. John G. Adams, New York; George H. Hubbard, Lansingburg; William H. Thayer, Brooklyn; Edward H. Parker, Poughkeepsie; H. K. Bellows, Norwich; John P. Gray, Utica.

DELEGATES TO THE CONNECTICUT STATE MEDICAL SOCIETY.

Drs. Gurdon Buck, New York; Seth Shove, Katonah; A. T. Douglas, Rondout; James M. Minor, Brooklyn; Eugene Beach, Gloversville; Jared Linsley, New York; Bradford S. Thompson, Salisbury, Conn.

DELEGATES TO THE NEW JERSEY STATE MEDICAL SOCIETY.

Drs. Robert Newman, New York; Solomon Van Etten, Port Jervis; John G. Orton, Binghamton; James V. Kendall, Baldwinsville; Morgan Snyder, Fort Plain.

DELEGATES TO THE NEW HAMPSHIRE STATE MEDICAL SOCIETY.

Drs. J. H. Pooley, Yonkers; M. R. Holbrook, Poughkeepsie; William M. Chamberlain, New York.

DELEGATES TO THE VERMONT STATE MEDICAL SOCIETY.

Drs. George H. Hubbard, Lansingburg; N. H. Ballou, Mechanicsville; J. H. Wheeler, Athens.

DELEGATE TO THE CANADIAN MEDICAL ASSOCIATION.

Dr. Arthur S. Wolff, Plattsburg.

DELEGATE TO THE MICHIGAN STATE MEDICAL SOCIETY.

Dr. Charles G. Bacon, Fulton.

COMMITTEE ON STATISTICS.

First District—Dr. Ellsworth Eliot, New York.

Second District—Dr. John Ordronaux, Roslyn.

Third District—Dr. Joseph Lewi, Albany.

Fourth District—Dr. B. F. Sherman, Ogdensburg.

Fifth District—Dr. Henry N. Porter, New York Mills.

Sixth District—Dr. John G. Orton, Binghamton.

Seventh District—Dr. Henry D. Didama, Syracuse.

Eighth District—Dr. Julius F. Miner, Buffalo.

COMMITTEE ON PRIZE ESSAYS.

Drs. Thomas F. Rochester, Buffalo; Henry W. Dean, Rochester; Julius F. Miner, Buffalo.

COMMITTEE ON PUBLICATION.

Drs. J. V. P. Quackenbush, Albany ; Thomas Hun, Albany ; William H. Bailey, Albany.

COMMITTEE ON BY-LAWS.

Drs. Oliver White, New York ; Thomas Hun, Albany ; William H. Bailey, Albany.

CENSOR OF THE SYRACUSE UNIVERSITY MEDICAL DEPARTMENT.

Dr. Samuel G. Wolcott, Utica.

On motion, Dr. Quackenbush cast the vote of the Society, and the various officers were declared unanimously elected.

Dr. WILLIAM GOVAN offered the following :

Resolved, That the thanks of this Society be tendered to John Swinburne for his generous hospitality extended to them at the banquet given by him at the Delavan House last evening.

Adopted.

Dr. QUACKENBUSH offered the following :

Resolved, That the thanks of the Society be presented to President Moore for the impartial, prompt, and business-like manner in which he has performed the duties of presiding officer of this Society.

Adopted.

Dr. MOORE responded to this resolution, and, upon motion, the Society then adjourned.

NEW YORK SOCIETY OF NEUROLOGY AND ELECTROLOGY.

THE first stated meeting of the New York Society of Neurology and Electrology was held at the College of Physicians and Surgeons, on Wednesday evening, January 21, 1874 ; the President, Dr. Meredith Clymer, in the chair.

On motion of Dr. E. C. SEGUIN, it was resolved to dispense with the reading of the minutes of the last meeting.

Dr. E. C. SEGUIN presented specimens and drawings from a case of tumor of the spinal cord. The patient had suffered from a myxo-sarcomatous tumor compressing the cord in the cervical region. At the autopsy a second tumor (from which the specimen was taken) was found in the lumbar re-

gion. A transverse section of this tumor showed the apparent elements of three distinct spinal cords, the gray matter of each, with more or less marked commissures, anterior and posterior cornua being clearly visible.

Dr. SWEEZEY exhibited a case of aphasia without paralysis. The patient, a boy, aged nine years, had no previous morbid history except some dyspnœa and palpitation following an attack of scarlatina five years ago. On Christmas-night, 1873, he went to bed in apparent good health, and on waking next morning was found to have lost the faculty of speech. Now complains of occasional vertigo and headache. There is some cardiac enlargement, with mitral systolic murmur. The memory for words is improving. There is not, nor has there been at any time, the slightest discoverable paralysis.

On motion of Dr. SEGUIN, the case was referred, for examination and report, to the Committee on the Physiology and Pathology of the Nervous System.

Dr. MASON mentioned that he had seen a case of aphasia without paralysis in a woman, a music-teacher by occupation, who suddenly became aphasic while reading a letter. She recovered from this, but had another sudden loss of memory for words a few days afterward. A singular symptom in this case was that sound seemed to awaken the faculty of speech. She could not repeat the words of a song of her own composition, but could sing them.

Dr. STURGIS had seen a case of non-paralytic agraphia and aphasia from syphilitic disease.

Dr. CLYMER had seen several cases of aphasia (two at least following fevers) unaccompanied by paralysis.

Dr. SEGUIN cited the condition described as "toxic aphasia," which has been known to follow snake-bites.

Dr. CLYMER delivered the Inaugural Address on some current topics in neurology, reviewing the recent researches of Fritsch, Hitzig, Ferrier, and others, stating the present condition of our knowledge as to the physiology of the cerebral functions.

Dr. BYRNE exhibited a new and compact galvano-caustic battery devised by him, and demonstrated its thermal power. He had ascertained that, although a pair of elements, of which

the negative plate has a surface of, say, sixty inches, be incapable of heating a platinum wire, the same plates, if divided into a number of smaller strips, may be made to exert quadrupled thermal power when immersed in a single cell. The battery exhibited consisted of zinc and carbon plates about three and a half inches long by an inch and a quarter wide, arranged alternately in two rows, with very small intervals, the negatives and positives being respectively connected by wires on the upper surface of the binding plate. The cell thus formed, about three inches square, was set in action by a solution of sulphuric acid and bichromate of potash, and sufficed to render incandescent a stout platinum wire of medium length. Two such cells are sufficient for any galvano-caustic operation. Dr. Byrne also showed an ingenious method of counteracting polarization of the plates by means of a small hand-ball pump and flexible tube, whereby air may be forced into the cell and the bubbles of hydrogen dislodged from the negative surface.

The Society then went into executive session.

NEW YORK LARYNGOLOGICAL SOCIETY.

*January 8, 1874, at No. 214 West Forty-eighth Street—Dr. WEIR,
President, in the Chair.*

DR. CLINTON WAGNER introduced for examination a man, aged thirty-one years, a laborer, who had been hoarse for four years, owing to the existence of two papillomatous growths in the larynx, one covering the right cord for two-thirds of its length, and the other the middle third of the left cord. Dr. Wagner removed the growths with Mackenzie's forceps at one sitting. Voice entirely restored; no reappearance after four months.

Dr. F. H. BOSWORTH presented a female patient suffering from elliptical paralysis of vocal cords; and a man with extensive syphilitic ulceration of the pharynx.

Dr. GEORGE M. LEFFERTS detailed the histories of two cases of oedema glottidis. The first was a man, J. L., aged thirty years, a laborer; presented himself at the throat clinique of

the New York Eye Infirmary, with symptoms which dated three days back. Scarification was performed once, followed by immediate relief, and cure. The second case was a man, J. McK., aged forty years, a laborer, a patient of the throat clinique of the Demilt Dispensary. He presented himself with œdema of the glottis, the history of which dated back twenty-four hours. Three scarifications were performed, followed by temporary relief, lasting from two to six hours. Eventually tracheotomy was performed by Dr. Lefferts, assisted by Dr. Asch, and the patient is now convalescing.

Dr. BEVERLY ROBINSON presented and described an apparatus for irrigation of the naso-pharyngeal tract.

After executive session the Society adjourned.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

At the stated meeting held January 22, 1873, Ellsworth Eliot, M. D., President, in the chair, the following gentlemen were admitted to membership:

Horatio Bridge, 22 East Forty-first Street, a graduate in medicine at Harvard College, Cambridge, Mass., in 1871; Thomas T. Sabine, 46 West Twenty-third Street, a graduate in medicine at the College of Physicians and Surgeons, Medical Department of Columbia College, in 1864; Benjamin L. Scharlan, 15 Beach Street, a graduate in medicine at the University of Berlin, Germany, in 1864; Lucian C. Warren, 749 Sixth Avenue, a graduate in medicine at the Medical Department of the University of the City of New York, in 1867; Coert Dubois, Woman's Hospital, a graduate in medicine at the College of Physicians and Surgeons, Medical Department of Columbia College, in 1872; Augustus Viele, 579 Lexington Avenue, a graduate in medicine at the College of Physicians and Surgeons, at Fairfield, N. Y., in 1837; Alexander C. Graham, 159 East Forty-sixth Street, a graduate in medicine at the Bellevue Hospital Medical College, in 1869; Andrew R. Robinson, a graduate in medicine at the Bellevue Hospital Medical College, in 1868; William F. Mittendorf, 110 East Twenty-seventh Street,

a graduate in medicine at the College of Physicians and Surgeons, Medical Department of Columbia College, in 1873; Edward G. Loring, 151 Lexington Avenue, a graduate in medicine at Harvard College, Cambridge, Mass., in 1864.

The PRESIDENT announced the death of the following members: Alfred Underhill, M. D.; Merrill W. Williams, M. D.; William C. Roberts, M. D.; J. E. Stillwell, M. D.; Jonas P. Loines, M. D.; and Peter Van Buren, M. D.

After the report of the Committee on Meteorology, Dr. Mary Putnam Jacobi read the paper of the evening, on the "Pathogeny of Infantile Paralysis.

The PRESIDENT announced that at the last meeting of the Comitia Minora the name of Dr. Arthur Ernest Sansom, of London, was proposed for honorary membership, and it was voted to recommend his election at the next meeting of the Society.

The memorial of the American Medical Association relative to the rank of the medical corps of the United States Army was presented by the President, who said that the Academy of Medicine had already appointed a committee to draft suitable resolutions expressive of their sympathy with the medical officers of the service in this movement.

On motion of Dr. J. C. Peters, a committee, consisting of Drs. H. B. Sands, A. C. Post, and I. E. Taylor, was appointed by the President to consider the memorial, and report at the next meeting of the Society.

Dr. JACOBI announced that he had received from Germany a number of pamphlets which had been donated to this Society. On motion, they were presented to the Medical Library and Journal Association.

The PRESIDENT announced that Dr. Moreau Morris would present to the Society, at its meeting in January, a report of the Committee on Hygiene, of which he is chairman, on the subject of drainage, which would be the paper of the evening.

Bibliographical and Literary Notes.

ART. I. — *Clinical Reports from Private Practice.* By JOHN HERBERT CLAIBORNE, A. M., M. D., etc. 8vo, pp. 424. Petersburg, Va. : Joseph Van Holt Nash, 1873.

WE fully appreciate the endeavor of Dr. Claiborne to add something to medical literature; but while he has no doubt presented his experience honestly, and furnished some interesting cases, with the results of treatment, yet very much commonplace matter is introduced, and many of the histories lack that completeness of description necessary for their correct appreciation.

We must also beg to differ widely from the author in his views of treatment in perhaps the majority of cases. He clings to the use of mercury, the lancet, and antimony (especially the former), in many cases in which their employment has been abandoned by the profession generally, both from the results of experience and scientific deduction. The author claims success—*ergo*, his treatment is good. He thinks patients in private practice, from the higher walks of life, will bear mercury better than hospital cases. Very true. But does it follow that, because a man is able to bear up under many infirmities, they should be unnecessarily increased? If it can be shown that mercury is of no benefit in controlling inflammation in a weakly subject, the same will hold true in any individual. We venture the opinion that, although one may recover apparently from the immediate effects of a course of mercury, children of parents so treated may inherit a cachectic condition in consequence. We introduce a quotation from page 345, to give an idea of the author's style, as well as one of the essentials in his treatment of delirium tremens, it being a fair exhibit of his views of treatment in a variety of cases:

“What pathological condition so plainly indicates the exhibition of mercury? What remedy so well fills the indication? A sedative and tranquillizing agent in its primary action upon the stomach and bowels, it, in addition, early restores and corrects the suspended and perverted secretions. Under its influence the liver pours out a tarry, viscid bile (Mr.

Hughes Bennett and his dog committee to the contrary notwithstanding), the intestinal capillaries exude a nauseous poison they have been forced to imbibe; the kidneys hasten their distilling process, and the work of depuration is begun. The blood is purged of *materies morbi*; the nervous centres are freed from their unnatural potion; the viscera are relieved of their engorgement; the circulation is equalized, and the system, if not restored to a healthy tone, is at least fitted for the action of the only remedy required to complete the cure."

The author recommends blood-letting in puerperal eclampsia, sometimes very largely, although he seems to be aware of the recently received views of its pathology, and the pathology of convulsions in general.¹ He has met with success in the use of the oxide of zinc in the treatment of menorrhagia.

We notice but little in the book that warrants its publication, or which may not be found in any text-book on practical medicine, except the author's special views. It contains some errors which careful proof-reading might have prevented. Thus, many prescriptions are given embracing two languages, and as many cases in each. In other respects the publication of the book is done in a creditable manner.

ART. II.—*The Principles and Practice of Medical Jurisprudence.* By ALFRED SWAINE TAYLOR, M. D., F. R. S., etc. Second edition. Philadelphia: Henry C. Lea, 1873. 2 vols., pp. 723, 672.

AMONG Anglo-Saxon works on medical jurisprudence that of Dr. Taylor occupies a deservedly high position. While upon some subjects it is not so complete as the remarkable treatise of Wharton and Stillé (of which Mr. Wharton has just issued an almost rewritten edition), in others it is even

¹ We can conceive of cases requiring the abstraction of blood in convulsions, but we cannot but dissent from the author's view of its employment in every case, nor should we recommend it in a considerable proportion of cases.

fuller. Comparing the two works, we should say that, in all that relates to mental unsoundness, Mr. Wharton's is vastly superior to Dr. Taylor's, and indeed to every other either in the English or any other language, while in the department of toxicology Dr. Taylor's bears away the palm. As regards other subjects, both are exceedingly complete, and so distinct in the description and illustration of cases that no one pretending to be a student of medical jurisprudence can manage to do without both treatises.

Perhaps in none of the relations which physicians hold to society do they in general appear to less advantage than as witnesses before a court of justice. This is not the result of natural diffidence, or an indisposition to speak the truth. They are certainly not remarkable for shyness—are in fact as a class more courageous than their adversaries the lawyers—and no one can question their possession of truthfulness in as great a degree as members of other professions. But there is no denying the fact that they are bad witnesses, and this is undoubtedly due to the additional facts that they are not well versed in the science of medical jurisprudence, and that what they say on the witness-stand is too commonly so clothed in technical language that judge, jury, and lawyers, are unable to comprehend them. Thus, on a trial for assault, a medical witness gravely informed the court (how he could keep his countenance while he spoke is surprising) that he found an individual “suffering from a severe contusion of the integuments under the left orbit, with great extravasation of blood and ecchymosis in the surrounding cellular tissue, which were in a tumefied state. There was also considerable abrasion of the cuticle.” “You mean, I suppose,” said the judge, “that the man had a black eye?” “Yes,” replied the doctor. “Then why not say so at once?” inquired the judge.

No one in the court could fail to understand what was meant after the judge had extracted the information in the vernacular tongue, though probably not two persons comprehended the witness in his classical but obscure description.

But not the least valuable part of Dr. Taylor's work is that which relates to the testimony of a medical witness, and the necessity for every member of the profession acquiring a sound knowledge of the science of medical jurisprudence.

In the section on toxicology very large additions have been made, and several new and interesting cases have been cited. We cannot, however, avoid remarking, both in relation to this and other sections, that Dr. Taylor rarely deems it necessary to refer to American cases. This is to be regretted, not only on account of the fact that the usefulness of his work is thereby somewhat impaired on this side of the water, but for the sake of his British readers, who would otherwise be benefited to no small extent through the freshness and originality of many recent examples in American medical jurisprudence.

In the section on bruises and injuries several important additions have been made. The subject of spectral analysis, as applied to the detection of blood-stains, is well and clearly worked up, and the full details of the guaiacum process for determining the presence of blood are given.

In considering the subject of hanging, Tardieu's extraordinary monograph¹ is freely used, and cases occurring within the range of Dr. Taylor's personal experience are cited. But the work is deficient in one very essential point, and that is as regards psychological medicine in its relations to medical jurisprudence. Less than one hundred and fifty pages are given to this most important subject. There is, therefore, a marked contrast with Wharton's,² to which reference has already been made, and with Tardieu's elaborate treatise.³

Upon the whole, however, Taylor's work is well worthy the reputation which it has acquired in this country and in England. It is a treatise without which no medical library can be considered at all complete, and, if it were more thoroughly studied by certain members of the medical profession, there would be far fewer of those disgraceful exhibitions on the witness-stand which have rendered the term "medical witness" a reproach to our honorable profession. We have several times had occasion to be present when physicians on the stand, in presence of a learned court and bar and an intelligent jury, have been obliged to confess under oath that they

¹ "Étude Médico-légale, sur la Pendaison," Paris, 1870.

² "A Treatise on Mental Unsoundness, embracing a General View of Psychological Law," Paris, 1873.

³ "Étude Médico-légale, sur la Folie," Paris, 1872.

had never read a work on medical jurisprudence or heard a lecture on the subject. What weight can the testimony of such persons have with a jury or with the public, and what amount of hardihood must they possess to cause their appearance as experts in cases involving life, liberty, and property?

Let us hope that, through the efforts of such societies as the Medico-Legal of this city, and the dissemination of books like Dr. Taylor's, a more advanced state may be reached, and that a physician will not venture to obtrude his half-formed and uncertain opinions upon courts till he has well mastered the subjects to which they refer. Perhaps this is too much to expect, for, as long as this world lasts, and human nature undergoes no radical change, the line of Pope will probably continue to express its full measure of truth, that—

“Fools rush in where angels fear to tread.”

ART. III.—*The Puerperal Diseases. Clinical Lectures delivered at Bellevue Hospital.* By FORDYCE BARKER, M. D. New York: D. Appleton & Co., 1874.

OF late years much attention has been bestowed upon the important affections which unhappily complicate the puerperal state. When we remember their frequency, and the number of valuable lives they cost the community, it is evident that there is no department of medicine more worthy of study and investigation. The fruit of much thought and long experience is presented in this volume. Dr. Barker's competency to occupy the peculiar field he has chosen is beyond question.

The first three lectures, on puerperal convalescence, diet of puerperal women, and lacerations of the perinæum, call for no special comment. They are characterized by the well-known practical sense of the author. Many of the views he has already expressed before, and they have by this time pretty much made the circuit of the medical journals of this country and the Continent.

The lecture on “Thrombus of the Vulva and Vagina” is based upon an unusually large personal experience, viz., of

twenty-two cases. The treatment by immediate incision, and arrest of hæmorrhage by means of cotton-batting, saturated with the solution of persulphate of iron, has been very successful in his hands. It seems a better plan than awaiting the coagulation of blood within the tumor, previous to incision, as recommended by authors generally.

In the lecture on "Puerperal Albuminuria," we are glad to see Dr. Barker gives considerable prominence to medical treatment. We have always thought that there has been too strong a disposition to resort to premature labor before giving other remedies a fair trial. Premature labor should be our last and not our first resource.

In speaking of "Convulsions," Dr. Barker proposes to discard the time-honored form, termed the "hysterical." A couple of cases of labor, now distinct in our memory, where the women had convulsion, which, during the attack, presented the usual features of eclampsia, but were characterized, though often repeated, by the absence of all the usual after-disturbances, we thought then, and still think, deserved to be entitled "hysterical."

Dr. Barker does not agree with those who adopt the exclusive uræmic theory of convulsions. Indeed, the thorough partisans of the "uræmic school" have become of late less numerous than formerly. The list of predisposing causes, viz., "albuminuria, hydræmia, anæmia, uræmia, and primiparity," is an excellent one; but to it we would like to add specifically, though perhaps indirectly included, twin pregnancies. The employment of venesection in sthenic cases, here recommended, was eloquently urged by the author in this city some years ago, and contributed much to restore a valuable but discredited agent to its proper place in the treatment of this disease. Chloroform and morphia likewise come in for enthusiastic but merited encomiums.

As none of us have been able to consult a medical journal of any sort for the year past, without being brought face to face with Barker on sore nipples, the lecture on that subject calls for no special comment.

The lecture on "Puerperal Mania" is, by all odds, the most satisfactory account of the disease with which we are acquainted.

The lecture on "Relaxation of the Pelvic Symphysis" is very full, and deserves careful perusal. We believe that, as a rule, these cases are overlooked by those who have never had special attention directed to them. This is a pity, because the relief afforded by a bandage drawn tightly across the hips is so complete and instantaneous, that an error on our part exposes our patients to much needless suffering.

In a careful review of our knowledge concerning the pathology of phlegmasia dolens, Dr. Barker declines to accept the doctrine that the essence of the disease consists in either phlebitis, thrombosis, or the obstruction of the lymphatics. He wisely refrains from presenting any new theory, but states as the sum of our knowledge, what undoubtedly is correct, that "while phlegmasia dolens occurs in the puerperal state, and in association with diseases which cause inopexia, and while its most uniform autopsical lesion is venous thrombosis, we are still as ignorant of its real pathological nature as we are of that of rheumatism and many other diseases." In a small proportion of the cases we have seen, however, there appeared to be a direct connection between a pelvic cellulitis and the affection, the inflammation extending from the pelvis, and following the course of the sheath that envelops the large vessels. The researches of Von Recklinghausen and others, which show that nutritive plasma passes from the capillaries into spaces between the cells, whence it is afterward taken up by the lymphatics, with which these spaces enter into direct communication, open up a new field of inquiry in connection with phlegmasia dolens, which may possibly reinstate this recently-discovered part of the lymphatic system as the seat of the disease. In white swellings of the joints we find a condition of the skin that in a limited way suggests the swelling in phlegmasia dolens. The lecture on "Puerperal Thrombosis and Embolism" treats in a most complete and interesting manner causes of disturbance and death in puerperal women, the importance of which cannot be over-estimated.

Dr. Barker in the three following lectures attempts to distinguish between puerperal phlebitis, metritis (phlegmonous form), and peritonitis. These diseases present so many symptoms in common that we do not believe error can be

always avoided in their differentiation. Still the attempt should be always made, and we heartily recommend these lectures as furnishing incomparably the best directions for the formation of an opinion that we remember to have met with in obstetrical literature.

In the next lecture pelvic peritonitis and pelvic cellulitis are carefully considered. The rules for diagnosis are excellent, though we should hardly consider the pulse and temperature given for pelvic peritonitis (pulse 92-108, temperature 100° - 102°) as sufficiently high. In the case which illustrates the lecture, the temperature ranged between 103° and 105° , which seems to us to be nearer the average. Nothing could be sounder than the remarks upon the differential characteristics of pelvic peritonitis and pelvic cellulitis. The difference in symptoms being more in degree and intensity than in other regards, the determination of cases which occupy the border line is often exceedingly embarrassing. The swellings which result in either case are, as a rule, extra-peritoneal, and have their seat in the cellular tissue, which is likewise involved in pelvic peritonitis.

The book concludes with three lectures, one upon "Septicæmia and Pyæmia," and two upon "Puerperal Fever." These three lectures properly belong together. They are evidently the result of much reflection and study. In utter defiance of prevailing opinion, Dr. Barker maintains that, separate from pyæmia, septicæmia, phlebitis, peritonitis, etc., there is such a thing as puerperal fever. His chain of reasoning is too long to be given here. Whether we agree with Dr. Barker's conclusions or not, it is impossible to deny that this part of the book is extremely clever. There is little doubt that septicæmia is the most important factor in the so-called puerperal fever in hospitals. It is necessary to insist upon this point, as upon it so largely depend the prevention and stamping out of epidemics. Where a host of women are aggregated together, Spiegelberg's words will always remain true: "The requirements to be fulfilled are, early recognition and treatment of local diseases, isolation, plenty of spare room, plenty of attendants, much washing, plenty of water, air and light, daily disinfection of all the ejecta, etc." Safety consists in

always anticipating infection. But in large towns, apart from hospitals, and in rural communities, wide-spread and fatal epidemics of puerperal fever sometimes occur, which do not follow either in the track of one midwife or one physician, but attack the patients of all alike, and which are not readily explained by the theory of putrid infection. Indeed, the most ardent septicæmists are obliged to admit atmospheric influences and individual predispositions. It is upon this unoccupied territory that the arguments for a true puerperal fever can be most efficiently employed. How far Dr. Barker has succeeded in his task, we leave the reader to decide.

The work abounds in valuable therapeutical teachings. Its directions for treatment are always wise. The style is clear and interesting. Altogether it is destined, we think, to rank as one of the ablest treatises upon an obstetrical subject that has appeared for many years.

ART. IV.—*The Comparative Anatomy of the Domesticated Animals.* By A. CHAUVEAU, Professor at the Lyons Veterinary School. Second edition, revised and enlarged, with the coöperation of S. Arloing, Professor at the Toulouse Veterinary School. Translated and edited by George Fleming, F. R. G. S., Veterinary Surgeon Royal Engineers. New York: D. Appleton & Co., 1873.

It is strange how little has been accomplished in a systematic form by the English-speaking scientific world in the field of the anatomy of domesticated animals. Separate treatises we have, it is true, but none that can compare with this, either in comprehensiveness of plan, or in fullness and accuracy of detail. It is a portly volume of 927 pages, divided into nine books, each book devoted to a special portion of the anatomy of the domesticated animals. Thus, the locomotory apparatus, the digestive apparatus, the respiratory apparatus, the urinary apparatus, etc., are taken up *seriatim*, and handled in a manner that leaves little if any thing more to be desired.

But the work is not a mere catalogue of dry details.

While faithfully describing the various organs of the animal economy, it seeks the higher law of which these are but the varying expression. Its chief aim is to demonstrate the unity of plan which obtains amid diversities of form, and to this end it compares the organs of the different species of domesticated animals, first with each other, and then finally with those of man. Hence it is of value not only to the student of veterinary medicine, but to the physician and naturalist as well. And even non-scientific people—if there be any such nowadays—will derive both pleasure and profit from its pages, more especially if they be owners of any of the domesticated animals. With regard to the labor bestowed upon this production, its author remarks in the preface to the first edition: “No effort has been spared to achieve exactitude—the primary desideratum in such a work as this; neither have evenings spent in bibliographical researches, nor fatigue in the dissecting-room, been considered. All published writings on animal organization, general treatises, special manuals, monographs, and articles in periodicals, have been read and interrogated. . . . Animals of every kind were had recourse to, and we have largely profited by the immense resources which our position as principal of anatomical teaching in the Imperial Veterinary School has placed at our disposal.”

Since the date of the above, this, the second and latest edition of the work, has been given to the public. It is virtually a new book, having received many valuable additions from the pen of the rising anatomist M. Arloing, and from its translator Mr. George Fleming. In its present form it is the only standard treatise on the subject in the English language. Paper, letter-press, and illustrations—of which latter there are 450—are all of superior quality, and the moderate price of the volume places it within reach of every student.

ART. V.—*The New Chemistry*. By JOSIAH P. COOKE, JR.,
Erving Professor of Chemistry and Mineralogy in Harvard University. New York: D. Appleton & Co., 1874.

This book forms one of the “International Scientific Series,” and is based on lectures delivered by the author before

the Lowell Institute, Boston. The easy, conversational style of the lecture is preserved throughout, and numerous illustrations and diagrams are employed as a substitute for the apparatus used by the speaker. In no other work with which we are acquainted are the elements of chemistry so clearly and simply presented. The author begins by defining the term *molecule*, and proceeds to explain the principles on which the new system of chemistry is founded. He takes as its corner-stone the law of Avogadro, that "equal volumes of all substances, when in the state of gas, and under like conditions, contain the same number of molecules," and by a series of simple experiments, which the student may easily perform for himself, demonstrates the molecular structure of solid, liquid, and gaseous bodies. The chapters on chemical composition, analysis and synthesis, elementary substances, atomic weights, and chemical symbols, are models of simplicity, and serve to impress the fundamental principles of the science so firmly on the student's mind, that subsequent study is shorn of half its terrors. We have no hesitation, therefore, in recommending the work as the best elementary treatise on chemistry, both for beginners and for those who, having studied the science under the former system, desire to become acquainted with the chief characteristics by which the new chemistry differs from the old.

BOOKS AND PAMPHLETS RECEIVED.—The Sphygmograph; its Physiological and Pathological Indications. The Essay to which was awarded the Stevens Triennial Prize, by the College of Physicians and Surgeons, New York, April, 1873. Two Hundred and Ninety Illustrations. By Edgar Holden, A. M., M. D. Philadelphia: Lindsay & Blakiston, 1874.

History of the American Ambulance established in Paris during the Siege of 1870-'71, together with the Details of its Methods and Work. By Thomas W. Evans, M. D., D. D. S., President of the American International Sanitary Committee, etc. London, vol. i. Printed for the Author at the Chiswick Press. Published by Sampson Low, Marston, Low & Searle, 1873.

The Student's Guide to Surgical Anatomy. Being a Description of the most Important Surgical Regions of the Human Body, and intended as an Introduction to Operative Surgery. By Edward Bellamy, F. R. C. S., Senior-Assistant Surgeon to Charing-Cross Hospital, etc., etc. With Illustrations. Philadelphia: Henry C. Lea, 1874.

A Clinical History of the Medical and Surgical Diseases of Women. By Robert Barnes, M. D., London, Obstetric Physician and Lecturer on Obstetrics and Diseases of Women to St. Thomas's Hospital. With One Hundred and Sixty-nine Illustrations. Philadelphia: Henry C. Lea, 1874.

Twentieth Report upon the Registration of Births, Marriages, and Deaths in the State of Rhode Island, for the Year ending December 31, 1872. Prepared under the Direction of Joshua M. Addeman, Secretary of State. By Edward T. Caswell, M. D. Providence, 1874. Pp. 96.

The Nature of Gunshot-Wounds of the Abdomen, and their Treatment. Based on a Review of the Case of the Late James Fiske, Jr., in its Medico-Legal Aspects. By Eugene Peugnet, M. D., Surgeon to the Northwestern Dispensary, etc. New York: William Wood & Co., 1874.

Du Traitement des Rétrécissements de l'Urèthre par la Dilatation progressive. Par T. B. Curtis, of Boston, Mass., Docteur en Médecine de la Faculté de Paris, etc. Travail couronné par la Commission du Prix Civile pour l'Année 1872. Paris: J. B. Baillière et Fils, 1873.

On Sarcomatous Growths of the Uterus. By William Jenks, M. D., Surgeon to the State (Pennsylvania) Hospital for Women. Reprinted from the American Supplement to the *Obstetrical Journal of Great Britain and Ireland*. Philadelphia: Collins, 1873.

The Physician's Dose and Symptom Book, containing the Doses and Uses of all the Principal Articles of the Materia Medica and Official Preparations, etc. By Joseph H. Wythes, A. M., M. D. Eleventh edition, revised. Philadelphia: Lindsay & Blakiston, 1874.

Inaugural Address of Clark Bell, Esq., delivered before the Medico-Legal Society of the City of New York, November 26, 1873, on assuming the Chair of President of that Society. New York: Russell Brothers, 1874. Pp. 23.

A Hand-Book of Medical and Surgical Reference. By John A. Wyeth, M. D., Assistant Demonstrator of Anatomy at Bellevue Hospital Medical College, etc. New York: William Wood & Co., 1873.

Transactions of the Illinois State Medical Society. Twenty-third Anniversary Meeting, held at Bloomington, May 20 and 21, 1873. Chicago: Fergus Printing Company, 1873. Pp. 268.

Transactions of the American Ophthalmological Society, Ninth Annual Meeting, held at Newport, R. I., July, 1873. New York: William Wood & Co., 1873.

The Chicago Medical Examiner; a Semi-Monthly Journal. Edited by N. S. Davis, M. D., and F. H. Davis, M. D.; vol. xiv., 1873. Chicago: J. J. Spalding & Co.

Report of the Committee on the Yellow-Fever Epidemic of 1873, at Shreveport, Louisiana. Published by the Howard Association, Shreveport, La., 1874.

Yellow-Fever Epidemic of Memphis, Tennessee, 1873, as observed by Y. R. Le Monnier, M. D., Visiting-Surgeon to Charity Hospital, New Orleans.

Transactions of the American Otological Society, Sixth Annual Meeting, held at Newport, R. I., July, 1873. Boston: Alfred Mudge & Son, 1873.

Relations of Colorado to Pulmonary Consumption. By Thomas E. Massey, A. M., M. D. Denver: Dailey & Smart, 1874. Pp. 26.

Eighteenth Annual Report of the Trustees of the State Lunatic Hospital, at Northampton. Boston: Wright & Potter, 1874.

Transactions of the Indiana State Medical Society, Twenty-third Annual Session, 1873. Pp. 145.

Miscellany.

The Siamese Twins. Report of the Autopsy.—A special meeting of the College of Physicians of Philadelphia was held on the 18th ult., for the purpose of hearing the report of Drs. W. H. Pancoast and Harrison Allen on the recent *post-mortem* examination of the bodies of the Siamese Twins. We are indebted for the following details to the Philadelphia *Medical Times*:

Dr. Pancoast said: At the investigation which we made on the first occasion at Mount Airy I made the opening incision of the body on the line for the ligation of the primitive iliac, on the right side; Dr. Allen made the incision on the left. The object was to reach the great vessels—the aorta and two primitive iliacs—and to force the injecting material which we use for embalming (chloride of zinc) up the aorta and down the iliacs until it ran from the incisions made in the fingers and toes. It flowed freely through the blood-vessels of Eng, owing to the ossified condition of his arteries; the injection in Chang was, however, not so successful, owing to decomposition in the tissues and blood-vessels. It was necessary to repeat the injecting process several times in order to preserve the body. The arteries of Chang were found to be very much decomposed—quite rotten, in fact.

Of course, the consideration of greatest interest to the profession, and one of the main reasons why the commission

made such exertions to obtain this *post mortem*, was that the American profession might not be charged with having neglected an effort to obtain an autopsy which would solve the mystery of their union. The feature of greatest interest is connected with this band—about four inches long, and eight inches in circumference. In addition to this, there are other points of importance in teratology, in regard to the fulfillment of the law of homologous union, in relation to the juncture of the recti muscles, and the fasciæ of the obliquus and transversalis at their point of meeting in the centre of the band. In regard to the position of the hearts, we think their apices present toward each other; but we have not yet opened the thorax. The livers we have found to approximate to each other and to push through the respective peritoneal openings of the band. We extended our incisions to the margin of the band in front. By placing my hand in the peritoneal cavity of Eng, and my colleague placing his hand in the peritoneal cavity of Chang, we pushed before us processes of peritonæum, which ran on to the median line of the band; and we could feel our fingers in the lower portion of the band, behind the median line, with a distinct layer of peritonæum between them, demonstrating at once the prolongation of the peritonæum into the band, and the complete separation of one peritoneal cavity from the other at this median line. Above that we felt some traces of vascular connection, apparently running from one liver to the other; but this we will examine into when we have a better opportunity of carefully dissecting and examining what vascular structures may exist. We also noticed that, in turning off the flaps consisting of the anterior walls of the abdomen, the hypogastric arteries, as illustrated by the diagram on the black-board, ran upward in each body into the band. We lost them in this way, as we think, toward the common umbilicus in the anterior inferior surface of the middle of the band.

It is probable that the two hypogastric arteries on each side passed through this umbilicus. Whether or not there were two umbilical veins, we have not yet been able to decide, nor to answer the question whether the umbilical cord was double or single and composed of the four hypogastric

arteries and two umbilical veins, or whether the placenta was single, double, or twin.

We also recognized that the ensiform appendix, as shown in the diagram of each side, was prolonged and united in the middle line. On our later examination we find that there is complete continuity of structure of the cartilages, but no true joint at the middle line, although it is possible there may be some small synovial sacs farther up. The motion is mainly due, as I here demonstrate to you by moving these bodies one upon the other, to the elasticity of the connected ensiform appendices and intervening fibro-cartilages.

In regard to the vascular connection of the band, we have not yet been able to make so thorough and careful an examination as we wished; but still, in throwing colored plaster into the portal circulation of Chang, it has been found to flow through the vessels of the upper part of the band into the portal vessels of Eng. So that the surgical anatomy of the band consists in the skin and fascia which cover it, the two separate peritoneal pouches which meet in the middle, the large peritoneal pouch, the vascular connection, to whatever extent that may exist between the two portal circulations, and the remains of the hypogastric arteries in the lower portion of the band. Thus the main difficulty in any operation for section of the band would seem to be in regard to the peritoneal processes and the portal circulation. The anastomosis which may exist between the internal mammary arteries and the intercostals in the integument in the upper portion of the band, of course, would present no difficulty.

I will not venture upon any further remarks as to the surgery of the case, while there are so many distinguished gentlemen present more competent than myself to give an opinion. At the same time, operations on the peritonæum may not be considered so hazardous in this day, when ovariectomy, gastrotomy, and even Cæsarean section, are so often performed. The peritoneal pouches themselves would not present so great a difficulty as might be anticipated, under pressure and acupuncture, by which the sensitiveness of the structure might be so altered as to permit of a section.

I was informed at Mount Airy that in Paris a surgeon had made the experiment of applying pressure upon the band, and it was reported the twins had fainted in consequence. I could not ascertain, however, whether this was from fright, design, or actual pain.

As Dr. Hollingsworth is present, it may be proper for me to mention a fact which that gentleman can corroborate, that Eng was the stronger physically, and Chang was the stronger mentally. The same difference was observable in their characters. Chang was more irritable than Eng, especially since an attack of paralysis with which he had been afflicted—this being in the side next to Eng. The latter had not only to bear with the irritability of his associate, but also to support one-half his weight. Among other peculiarities, Chang would sometimes break useful articles, or throw them in the fire.

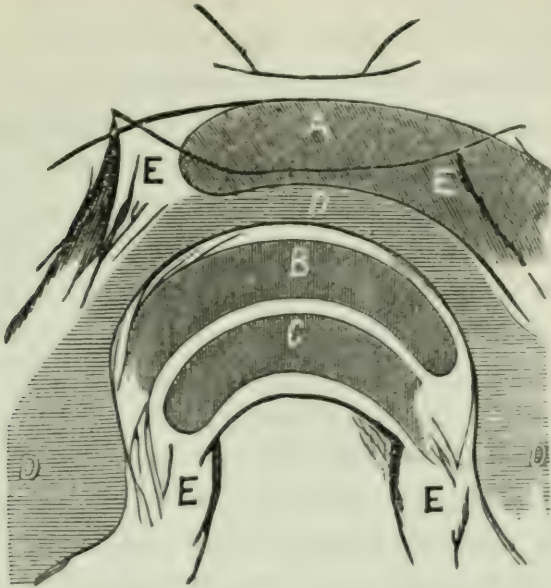
In conclusion, let me say that when I turned up the skin and superficial fascia of the H incision, on the posterior part of the band, I was struck with the development and the strength of the abdominal aponeuroses. The fibres arched, interlaced, and developed into a strong fibrous band about a quarter of an inch wide, running around the median line, although there was no actual joint in the cartilage.

Prof. Harrison Allen said:

Mr. Chairman: I will probably best discharge the duty devolving upon me by at once proceeding to a somewhat more minute anatomical description than Dr. Pancoast has given, this being in accordance with the understanding between us in reference to the evening's exercises.

Perhaps it would be best to point to that simple diagram upon the black-board, before considering the subject more fully in detail. As Dr. Pancoast has informed the Fellows, there is a union of the twins at the two ensiform cartilages, which are very firmly joined in the centre, Eng's process being the more robust of the two. You will observe that there is a point of conjunction between the two processes, which is not quite in the median line of the band. In the centre of the band is seen an elliptical space which suggests the presence of a synovial cavity, with fibro-cartilage. It is probable that the ensiform junction is of the character of a

synchondrosis, with a median brush-like sac; neither ensiform cartilage is ossified.



DIAGRAMMATIC REPRESENTATION OF THE BAND.

- A*, upper or hepatic pouch of Chang.
- E, E* (dotted line), union of the ensiform cartilages.
- D*, connecting liver band, or the "tract of portal continuity."
- B*, the peritoneal pouch of Eng.
- C*, the lower peritoneal pouch of Chang.
- E, E*, lower border of the band.

Below this point, in the diagram, you see a number of differently-lined tracks. The lower one (*C*), immediately above the umbilicus, is only separated from the skin by a very delicate layer of tissue (so that, with the finger introduced into the pouch and moved, there is a decided indication of motion in the skin) on the under surface (*EE*) of the band.

This pouch passes across the band from the abdomen of Chang, and is lost in the duplicature of the suspensory ligament of the liver of Eng. The finger passed upward to the band from the abdomen of Eng crosses the band above the pouch just mentioned, and is lost between the layers of the suspensory ligament of the liver of Chang. When the significance of the round ligament, at the free border of the suspensory ligament, is remembered, the relations of the pouches directly suggest that they have had essential bearings to the umbilical vein of the funis, and might be provisionally termed the umbilical pouches.

Above Eng's pouch (*B*), and between it and the under surface of the ensiform conjunction, is a second pouch (*A*) prolonged from Chang's abdomen, which fairly reaches the peritoneal cavity of Eng, but is not continuous with it. Extending up into this pouch from Chang's abdomen is a process which suggested to the commission the possibility of the transit of hepatic vessels. This view was rendered more probable from the fact that a similar process passed up into the band from the liver of Eng. Accordingly, the plaster injection, colored by ultramarine, was thrown into a tributary of the portal vein of Chang, when it was observed that the fluid passed freely into the liver of Eng, as well as into some of the mesenteric veins proper. It is my own hypothesis that this bond of union (*D*) was the true hepatic tract; but in its present state, in the absence of evidence of any parenchymatous admixture about the vessels thus crossing the band, we prefer to denominate the transit as the *tract of portal continuity*.

In the foetal condition it is very likely that this large space (*A*), the upper pouch, now continuous with the abdomen of Chang only, was entirely occupied by true liver-tissue, which, as maturity was attained, became smaller, and left an empty space. Hence I propose to call this upper pouch the *hepatic pouch*. The contraction chanced to be greater on Chang's side, in harmony, it may be, with other evidences of a weaker and less developed type, which is so apparent in many of the tissues of Chang. Now, with reference to the demonstration: As Dr. Pancoast has already informed you, the incisions in the abdomen were made in rather an exceptional manner. By reference to the parts it will be seen that the incision in either individual was located in such a way as to avoid the median line, since it was supposed from the peculiar position of the umbilicus that the remains of the hypogastric arteries would be found extending from the fundus of the bladder upward and onward along the entire length of the anterior wall of the abdomen. Besides, this incision would enable us, by continuing from below upward, to fairly open the abdomen and examine the cord, without violating the conditions by which the commission was bound.

The flap comprises the greater part of the abdominal wall, and can be best observed, from the position of the bodies on the table, in that of Eng.

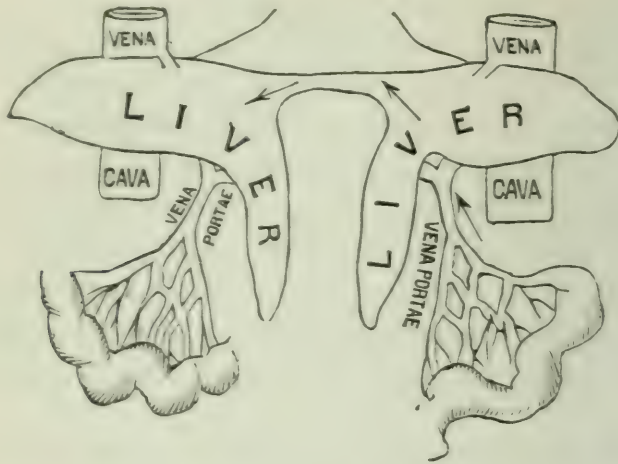
You notice that the tissues are well supplied with fat; and this condition is very plainly in contrast with that of Chang. Eng's side of the band is well nourished; Chang's end of the band presents an entirely different aspect. Chang was an invalid, and the weaker half of this organism, with less strength in the abdominal walls, and in every way less tissue, than was possessed by Eng. You can mark that distinction very plainly in the two halves of the band, proving, if we had no other means of proof, that there could not be any very intimate communication of the vessels between the two.

The first point worthy of notice is that of an isolated mass of adipose tissue, evidently sub-peritoneal, which is in the position of the usual umbilicus, namely, in the median line of the abdomen, about half-way up the anterior wall. This is strictly symmetrical, a similar point of about the same size being found in Chang.

Another fact equally well pronounced is that in Chang the bladder was found very much contracted, and contained no urine; it was deep down in the cavity of the true pelvis. That of Eng, however, was distended with urine; hence there was a contrast in the appearance of the fold underneath the skin in the two individuals, in consequence of the great difference in the actual size of the bladder.

My finger is now in the *umbilical pouch* of Chang (C). The motion is noticeable in the under surface of the band. On the side of Eng no such motion will be observed. I can very clearly see my finger passing between the two folds of the suspensory ligament. At this point it would perhaps be well to exhibit the drawings which have been made of the views which we have been able to obtain from this very limited incision. On looking up toward the band with the greatest possible stretch of tissue, we see the arrangement of the remains of the hypogastric arteries converging toward the bond of union. In this lower diagram we show you the livers joined by what is supposed to be the *tract of portal conti-*

nuity. You will observe the limits are somewhat symmetrical. Here is the liver of Chang, with a fore-shortened right lobe.



DIAGRAMMATIC REPRESENTATION OF THE LIVERS, PORTRAYING THE RELATIONS OF THE VESSELS, ETC.

[The arrows show the directions in which the injection passed from Chang to Eng.]

The remainder of the right lobe is deep within the abdomen, and of course it has not been seen. Here is the fundus of the gall-bladder, and there the suspensory ligament, carrying the remains of the umbilical vein. When the finger is passed from Chang into Eng, it is received between the folds of the suspensory ligament of Eng. In Eng the parts are essentially the same, although you see more evidence of adipose tissue. Here is a little ligament aiding in the support of the liver, to whose convexity it is attached; it is not seen in Chang at all. You might term it an accessory suspensory ligament. When the finger is introduced behind the pouch, it is observed to terminate blindly, showing, we think, that this is no more than an adventitious pouch due to the presence of that suspensory ligament.

We find some vessels of the portal system, even as far down as the mesentery, well filled with the blue coloring-matter. We, of course, desired, as far as possible, to examine all the tissues here by these incisions; hence it was that, when the bodies were in this position, the skin was taken off from the wall in order to get a view of the linea alba.

[The bodies were here inspected by the audience, and af-

terward turned so as to expose the posterior part of the band. Further remarks apply to this posterior aspect.]

Dr. Pancoast: While the bodies are being turned, I will take the opportunity of replying to one or two questions which have been asked me. First, in regard to the common sensibility of these individuals. According to the statements we received at Mount Airy, there was a line of common sensibility corresponding to the median line of the band. Dr. Hollingsworth says that, if a pin was stuck into the band at the median line, both of the twins would feel it distinctly; but that, even at a slight distance to either side, the point of the pin produced an effect only on the twin of that side.

Another question has been asked me as to whether either of them was ever put separately under the influence of an anæsthetic. I answer it by saying that, so far as we know, it never was attempted, but that when, upon the final occasion, Chang was anæsthetized by death, Eng was for a time unaffected. The story as told at Mount Airy was that Eng woke up and asked his son, "How is your Uncle Chang?" The boy said, "Uncle Chang is cold. Uncle Chang is dead." Then great excitement took place. Eng commenced crying out immediately, saying to his wife, whom they called in, "My last hour is come!" and finally sank away. He was in perfect health when they went to bed.

They had been sitting up in a large double chair made for their accommodation. Eng was smoking his pipe until he became sleepy, and finally said to Chang, "We must retire." Chang said that he could not lie down comfortably. I understand that, when they went from Chang's house to Eng's house, where they died, it was against the direction of Dr. Hollingsworth; but, with their usual stubbornness, they persisted in riding the distance in an open buggy. To return to the narrative of the night of their death. After Chang had refused to lie down, they walked about the house for some time, and even went out to the porch and washed their hands and drank some water. It was about one o'clock when they went to bed. Then Chang died, some time between that and morning; his death not producing any immediate impression on Eng. It was only when the latter woke up and inquired

about the condition of his brother that he was at all affected.

As to the question "What caused Eng's death?" I am not able to tell. The *post mortem* which has been made does not show the condition of his lungs. Probably the valves of his heart were in a disorganized condition, and probably also the shock upon that weakened organ caused death.

Dr. Allen: In my opinion, Chang died of a cerebral clot. From inquiry at his home, I was led to believe that the lung-symptoms were not due to pneumonia; indeed, were not severe enough to have been so caused. The suddenness of the death, the general atheroma of the arteries, and the fact that there had been previously an attack of cerebral paralysis, all indicated that the death was of cerebral origin. Eng probably died of fright, as the distended bladder seemed to point to a profound emotional disturbance of the nervous system, the mind remaining clear until stupor came on—a stupor which was probably syncopal. One thing to be settled in the making of our examination was, to get the bodies in the best possible position, so that we could judge of the true nature of the band.

You will observe the great contrast between the anterior appearance of the band and its posterior aspect. When we suspended them face to face, we conceived we had them in the proper position for study. On the posterior side there was a fold underneath the skin extending from the ensiform cartilage of Chang, passing over, crossing the median line, and inserted into the ensiform cartilage of the opposite twin, Eng. It was one of the objects of the examination to determine what was the nature of this fold. I judge it to be the *linea alba*; but I leave the Fellows to decide that for themselves. I will also add that, because we had not the privilege of cutting the anterior portion of the band, we were obliged to cut down from the point of which I have spoken to get to the structure, and demonstrate these *culs-de-sac* from behind.

Here (referring to the casts) from this point the incision is horizontal about midway, and joined laterally by two oblique lines which were directed one upward and the other downward and outward, making a modified letter-H incision. Thus

we got all the space we needed. When I raise the skin we see the umbilicus of the superficial fascia; and on lifting the other flap we get a better general demonstration.

And now we come upon the point of interest, namely, the position of the band and its true nature. We have a diagram here. You notice on Chang's side that there is an arrangement of interlacing aponeurotic fibres, marked here; and these fibres starting in Chang, pass across the median line and are inserted into the ensiform cartilage of Eng. Turning the lower flap downward, the upper flap upward, and the two lateral tongues outward, the superficial fascia is exposed. This is abundantly supplied with adipose tissue on either side, but is free from fat where it covered the band. Both the lower flap and the fascia are lost in the scar marking the position of the umbilicus. The same dissection exhibits the position of the lower pouch of Chang. Turning down the external oblique, the two recti, and the internal oblique muscles, the transversalis was exposed, the latter forming a very well-defined layer in Eng, with an interval between the ensiform cartilage and the inferior margin of the thorax. These were much less marked in Chang.

Turning forward this layer of fibres in Eng from without inward, the diaphragm is brought into view. Muscular fibres are conspicuous in this position. The peritonæum on either side is now fairly exposed. Incisions may now be made with a view of demonstrating the pouches of the band. The upper pouch of Chang is, you will observe, freely opened on its posterior aspect, and the vessels in the tract of portal continuity are seen to be well distended with the injecting fluid. A small artery is seen crossing beneath this tract of veins, and is probably a branch of the hepatic; but, whatever may be its origin, it evidently could have little effect in influencing the nutrition of parts beyond the band, and is probably retained within the band itself. The lower pouch of Chang reveals nothing which was not demonstrable from in front, and the same may be said of the single pouch of Eng; thus confirming our opinions of the construction of the band before the pouches had been opened from behind.

Treatment of Uterine Fibroids by Electrolysis.—In the *Boston Medical and Surgical Journal* of January 29, 1874, Dr. Gilman Kimball, of Lowell, gives his experience in the treatment of uterine fibroids by electrolysis. He regards Atlee's intra-uterine section as safe only in those rare cases in which the tumor is small and projects well into the uterine cavity. He has seen the long-continued use of intra-uterine injections of potassium "followed by a gradual diminution and final disappearance of a very large fibroid tumor of the uterus. The same remedy, since tried repeatedly, in a similar manner, and under apparently similar circumstances, has, in every instance, utterly failed."

The results of the use of electricity are reported in four cases. In the first case, "within three weeks from the first trial of the battery, there began to be manifest improvement in health." In the second case there existed, as complications, peritoneal effusion, anasarca of the lower extremities, and a most distressing dyspnœa. The immediate effect of the first operation was to quadruple the secretion of urine, and afford almost instantaneous and perfect relief from the dyspnœa. In less than a week the dropsical condition had entirely disappeared. The patient was under Dr. Kimball's care for six weeks, during which time the tumor diminished at least two and a half inches in diameter, and her general condition was greatly improved. Electrical treatment was discontinued in consequence of Dr. Kimball's departure for Europe, and the patient died with a return of her former troubles during his absence.

The third patient was suffering from a large uterine fibroid of some two or three years' growth, and was very weak and anæmic from profuse hæmorrhages. Three operations caused the tumor, which at first occupied a large portion of the pelvic cavity, extended quite up to the umbilicus, and was not less than eight or nine inches in diameter, to diminish so much in size that it could scarcely be felt. "Its final disappearance altogether can now hardly be questioned," and "in this instance electrolysis has certainly achieved a complete triumph."

The fourth case is reported as greatly improved, but, like

others, is still under treatment, the result of which is promised at some future time.

Appointments, Honors, etc.—Prof. Henry Draper has resigned the chair of Physiology in the University of New York. His place will be filled by Prof. J. W. S. Arnold during the remainder of the present session. Dr. A. T. Barnes has been appointed Superintendent of the Southern Illinois Insane Asylum, at Anna. Dr. James H. Denney has resigned the superintendency of the Retreat for the Insane, at Hartford, Conn. Dr. Gordon Russell has presented \$10,000 to the institution, for the erection of a memorial chapel for the use of the inmates. The Emperor of Austria has conferred the Commander's Cross of the Imperial Order of St. Joseph on Dr. J. E. Featherston, of New Zealand, one of the Colonial Commissioners at the Vienna Exhibition. The Hastings gold medal of the British Medical Association will be given this year for the best essay on "The Action of Alcohol in Health and Disease." Dr. Devergie is President of the Academy of Medicine of Paris for the present year. Dr. Robert Barnes and Dr. Braxton Hicks have been elected Honorary Members of the Obstetrical Society of Philadelphia. Dr. F. Macnamara has been granted a bonus of 5,000 rupees by the Government of India for his invention of a filter for use in the army. Prof. Parker, of Netley Hospital, and Mr. Howard, the quinologist, have been elected corresponding members of the Académie de Médecine of Paris. There are twenty-nine medical members of the National Assembly of France, and two *pharmaciens*. Rev. Dr. Haughton has been elected a Fellow of the Royal College of Surgeons of Ireland, by a unanimous vote. Dr. Joseph Dalton Hooker, of Kew Gardens, who has succeeded Sir George B. Airy as President of the Royal Society, is a son of the late distinguished botanist, Sir William J. Hooker, of Glasgow. Dr. Tilt has been elected President of the Obstetrical Society of Great Britain; Sir W. Jenner, Bart., President of the Pathological Society of London; and Mr. Prescott Hewett, President of the Clinical Society of London. Mrs. Sarah F. Norris, M. D., has arrived in Bombay, India, where she

intends to settle and practise. Dr. Wilson Fox has been appointed Physician-in-ordinary to the Duke and Duchess of Edinburgh. Prof. Rindfleisch, of Bonn, succeeded Prof. Klebs in the chair of Pathological Anatomy in the University of Würzburg. Prof. Klebs has accepted an appointment in the University of Prague.

The New York Society of Neurology and Electrology.—We give elsewhere a brief report of the proceedings at the first stated meeting of this Society, which, having been organized under the most favorable auspices, promises good and active work in the department of the highly-important branches of medicine which come within its province. The following are the officers of the Society :

President, Meredith Clymer, M. D.; Vice-President, Austin Flint, M. D.; Recording Secretary, Alfred L. Carroll, M. D.; Corresponding Secretary, John J. Mason, M. D.; Executive Council, Austin Flint, M. D., John C. Dalton, M. D., D. B. St. John Roosa, M. D., George M. Beard, M. D., Edward T. Loring, M. D., the President and Recording Secretaries, *ex-officio*.

The following are the Standing Committees: Anatomy and Histology of the Nervous System, J. W. S. Arnold, M. D., Edward T. Janeway, M. D., Edward C. Seguin, M. D.; Physiology and Pathology of the Nervous System, John C. Dalton, M. D., D. B. St. John Roosa, M. D., Edward G. Loring, Jr., M. D.; Psychology, Meredith Clymer, M. D., Ralph L. Parsons, M. D., John O'Dea, M. D.; Electro-Physics and Electro-Physiology, John J. Mason, M. D., Alfred L. Carroll, M. D., Wm. R. Fisher, M. D.; Electro-Therapeutics, George M. Beard, M. D., John Byrne, M. D., A. D. Rockwell, M. D.

Journalistic Notes.—The *Australian Medical and Surgical Review* has reappeared, after a long period of hibernation. The *Bulletin de Thérapeutique*, of Paris, has again changed hands, having been sold, it is said for 115,000 francs, to Dr. Dujardin Beaumetz. It is stated that M. Gubler is about to issue a new therapeutical journal. Dr. D. G. Brinton will continue without interruption the publication of the *Medical*

and Surgical Reporter and the *Half-Yearly Compendium*, having had entire charge of the business of the late Dr. S. W. Butler for some time past. The *Canadian Medical Times* has ceased to exist. The *Kansas City Medical Journal* is now issued every month instead of every second month, as formerly, and shows other signs of prosperity. *Ranking's Abstract*, heretofore published semi-annually, in London, and republished by Henry C. Lea, closes its career with the issue of January, 1874.

The Chicago Journal of Nervous and Mental Diseases.—We have received the first number (January, 1874) of this journal, which is to be issued quarterly, under the editorship of Drs. J. S. Jewell and H. M. Bannister. It is a handsome publication, of one hundred and fourteen pages, and begins its career with an excellent and interesting variety of original and selected matter. There is a great and growing activity in the various branches of medicine with which a journal of nervous diseases is especially concerned, and the editors of the Chicago journal are evidently determined to keep their readers thoroughly informed in every department. The field is a wide and rich one, and if the new journal makes the best of it there will be no doubt of its success.

Medical Society of the County of Kings.—At the fifty-third annual meeting of this Society, held January 20, 1874, the following officers were elected for the ensuing year:

President, A. J. C. Skene, M. D.; Vice-President, A. Hutchins, M. D.; Secretary, Richard M. Wyckoff, M. D.; Assistant Secretary, J. D. Rushmore, M. D.; Treasurer, G. G. Hopkins, M. D.; Librarian, W. W. Reese, M. D.; Orator, B. A. Segur, M. D.; Alternate, A. Mathewson, M. D.

Censors, J. H. H. Burge, M. D., J. S. Prout, M. D., S. G. Armor, M. D., H. G. Newton, M. D., C. H. Giberson, M. D.

Delegates to the Medical Society of the State of New York (1874 to 1878): Drs. A. Hutchins, J. S. Prout, B. A. Segur, S. G. Armor, W. H. Thayer, J. H. H. Burge, H. G. Newton, C. H. Giberson, A. Mathewson.

Delegates to the American Medical Association: Drs. E.

R. Squibb, S. G. Armor, A. N. Bell, I. H. Barber, H. S. Smith, D. A. Dodge, J. C. Hutchison, A. J. C. Skene, F. H. Colton, James Crane, Jno. Byrne, W. W. Reese, J. H. H. Burge, G. M. Beard, J. D. Rushmore, A. R. Matheson, A. Mathewson, A. Otterson, W. W. Reese, R. M. Wyckoff.

A National Board of Health.—The congressional House Committee on Commerce, on January 28th, authorized the chairman to report the bill to prevent the importation of contagious or infectious diseases into the United States.

It provides that the surgeon-generals of the army and navy, and the supervising surgeon of marine hospitals, of the Treasury, shall constitute a board of health, with the power to establish and enforce such rules and regulations as are necessary to prevent the importation of contagious diseases, and that the regulations, when approved by the President, shall have the force of law. It does not allow any interference with State or municipal regulations.

A Vivisector in Trouble.—Prof. Schiff, of Florence, having been charged with cruelty in his experiments on animals, which are said to have uttered “day and night frightful howls of pain,” publishes a card in reply to his adversaries, stating that he invariably renders the subjects of his experiments insensible to pain before operating, and takes every precaution to spare them from suffering. He also defends the practice of vivisection as one of great utility.

Medical Society of Bradford County, Pa.—A medical society was organized in Bradford County, November 26, 1873. The following officers were elected for the ensuing year: President, Dr. W. J. Mullen; Vice-Presidents, Drs. E. J. Miller, J. W. Rowe; Recording Secretary, Dr. C. A. Danaker; Corresponding Secretary, Dr. D. S. Griffith; Treasurer, Dr. A. E. Ely; Censors, Drs. D. A. Plank, P. H. Pennsylv, and Joseph Keiffe.

Murderous Attack by Lunatics.—A terrible event is an-

nounced as having occurred at the Lunatic Asylum of St. Andrews, near St. Petersburg, Russia. While the keepers were at dinner, the patients burst into a room where arms were stored, and with them attacked the warders, five of whom were killed and two seriously wounded. Six of the most violent of the assailants were placed in strait-waistcoats and confined in separate cells.

Inoffensive Sponge-Tents.—Lawson Tait, F. R. C. S., in the *Medical Times and Gazette* of January 10th, recommends the use of a five per cent. solution of oil of cloves in the preparation of sponge-tents, as a means of rendering them inoffensive and obviating the danger of septic peritonitis from their use. He finds a tent thus prepared perfectly free from the usual disagreeable odor after remaining twenty-four hours in the uterus.

The New Faculty of Medicine in Geneva.—The Grand Council of Geneva has sanctioned the creation of this new faculty in the Academy of Geneva, which is henceforth to be known as the University of Geneva. The curriculum will embrace the entire circle of theoretical and clinical medicine and surgery.

Medical Society of Chenango County, N. Y.—The annual meeting of this Society was held in Norwich, January 13th. The following officers were elected: President, Wm. H. Stuart; Vice-President, G. O. Williams; Secretary, D. M. Lee; Treasurer, Geo. W. Avery.

Death from the Use of Perchloride of Iron.—A foreign contemporary records a fatal instance of the use of a uterine injection of perchloride of iron. Peritonitis supervened soon after administration, and death occurred in thirty hours.—*Lancet*, January 17, 1874.

New York Pathological Society.—The following officers have been elected for the ensuing year: Dr. H. Knapp, President; Dr. J. Lewis Smith, Vice-President; Dr. George F. Shrady, Secretary; and Dr. John H. Hinton, Treasurer.

Pulmonic Candles.—The latest invention for the benefit of sufferers from chronic bronchitis and allied maladies is a candle, containing certain balsams and resins, which when burned renders the air fragrant and soothing to the lungs.

Erichsen on the Elastic Ligature.—In a letter to the *Medical Times and Gazette*, Mr. John Erichsen characterizes the use of Prof. Dittel's elastic ligature as "simply a return to mediæval barbarism."

Leipsic University.—It has been determined to expend 250,000 thalers for the establishment of a chair for Psychiatry in this university.

Army Intelligence.

Official List of Changes of Stations and Duties of Officers of the Medical Department, United States Army, from January 15, 1874, to January 31, 1874.

ABADIE, J. H., Surgeon.—Granted leave of absence for four months, on surgeon's certificate of disability. S. O. 2, A. G. O., January 2, 1874.

BAILY, Jos. C., Surgeon.—Granted leave of absence for two months. S. O. 15, A. G. O., January 26, 1874.

BENTLEY, E., Assistant Surgeon.—Granted leave of absence for thirty days, with permission to apply to the Adjutant-General of the Army for an extension of thirty days. S. O. 11, Department of California, January 21, 1874.

CAMPBELL, A. B., Assistant Surgeon.—Assigned to duty at Fort Clark, Texas. S. O. 4, Department of Texas, January 8, 1874.

GIBSON, J. R., Assistant Surgeon.—Granted leave of absence for forty days. S. O. 2, Division of the South, January 20, 1874.

HEIZMANN, C. L., Assistant Surgeon.—Assigned to duty as Post-Surgeon at Fort McPherson, Nebraska, S. O. 10, Department of the Platte, January 23, 1874.

TAYLOR, M. K., Assistant Surgeon.—Assigned to duty at Austin, Texas. S. O. 11, Department of Texas, January 19, 1874.



LOUIS JEAN RUDOLPH AGASSIZ.

Official List of Changes from February 1, 1874, to February 13, 1874.

EDWARDS, L. A., Surgeon.—Leave of absence extended fifteen days. S. O. 29, Military Division of the Atlantic, February 10, 1874.

WIRTZ, H. R., Surgeon.—Died at San Francisco, Cal., on January 24, 1874.

Obituary.

LOUIS JEAN RUDOLPH AGASSIZ, whose death occurred December 14, 1873, was born May 28, 1807, in Mottier, Switzerland, and received his early education at the Gymnasium of Bienne. He subsequently studied at the Academy of Zurich, in Heidelberg, in Munich, where he obtained the degree of Doctor of Medicine, and in Erlangen, where he became Doctor of Philosophy. He pursued his scientific studies later in Vienna, and went thence to Paris, where he made the acquaintance of Cuvier and Humboldt. In 1832, on the death of Cuvier, he left Paris, and was appointed Professor of Natural History in Neuchâtel, which position he held until his departure for the United States, in 1846. In the mean time, however, he had been an indefatigable student, and had already become widely known in the scientific world by his laborious investigations and brilliant discoveries. The history of his career in this country is well known. His zeal, his unselfish devotion to science, his inexhaustible energy, and his profound interest in the cause of education, secured for him universal esteem and affection, while his rare mental gifts and his vast store of knowledge fully entitle him to rank among the few really great men of the age.

We regret to be called upon to announce that Dr. SAMUEL WORCESTER BUTLER, late senior editor of the *Medical and Surgical Reporter*, of Philadelphia, died January 6th, after a lingering attack of phthisis pulmonalis. Dr. Butler was born in Brainard, Tenn., May 1, 1823. He graduated at the University of Pennsylvania in 1850, and first practised in

Burlington, N. J., where he was associated with Dr. Joseph Parrish in editing the *New Jersey Medical Reporter*. In 1858 he removed to Philadelphia, and changed the journal to the *Weekly Medical and Surgical Reporter*. In 1860 he was appointed physician to the insane department of the Philadelphia City Hospital, which position he filled for seven years. In 1866 he prepared and published the "Physician's Pocket Record," and in 1868 he established the *Half-Yearly Compendium of Medical Science*, both of which have appeared regularly ever since. The "Physician's Prescription Record" and the "Physician's Annual" also owe their existence to his enlightened appreciation of the wants of the profession. His last literary undertaking was the preparation for the press of "The Medical Register and Directory of the United States," a work of great labor, which he left partially completed. His health had been failing since 1871, when he suffered an attack of pneumonia, and he had been gradually withdrawing from the active duties of his business and professional life.

PROF. SANDFORD EASTMAN, formerly of Buffalo, died January 8th, at Riverside, Cal., of pyæmia, resulting from poison absorbed during an amputation for disease of the knee-joint, at the Hospital of the Sisters of Charity. Prof. Eastman was born in 1821. He was formerly one of the surgeons to the Buffalo General Hospital, and for several years filled the office of Health Physician of Buffalo.

DR. HENRY WILLIAM FULLER, author of the well-known work on Rheumatism, and other productions, died in December, in London, from pyæmic and pulmonary disease, in the fifty-sixth year of his age.

M. FERNAND PAPILLON, a rising *savant* of Paris, died recently of peritonitis, at the age of twenty-six. He is said to have contracted the disease while attending the funeral of his friend M. Charles Legros.

DR. MAX SCHULTZE, the eminent anatomist, died January 16, 1874, in Bonn.

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APRIL, 1874.

[No. 4.]

Original Communications.

ART. I.—*On Intra-Uterine Fibroids.*¹ By J. MARION SIMS, M. D., Surgeon to the Woman's Hospital of the State of New York.

THE names of Atlee and Peaslee will always be associated as pioneers in establishing ovariectomy in this country as a legitimate operation. But the name of Atlee stands without a rival in connection with uterine fibroids. His operations were so heroic that no man has as yet dared to imitate him. A generation has passed since he gave to the world his valuable essay² on the surgical treatment of fibrous tumors of the uterus, and it is only within the last five or six years that the profession have come to appreciate the great truths that he labored to establish. Meadows, of London, and Thomas, of New York, have done good work in this direction, and made valuable contributions to our literature, and a few isolated

¹ Read at the annual meeting of the New York State Medical Society at Albany, February 6, 1874.

² Prize Essay: "The Surgical Treatment of certain Fibrous Tumors of the Uterus, heretofore considered beyond the Resources of Art." By Washington L. Atlee, M. D., of Philadelphia. Extracted from the transactions of the American Medical Association for the year 1853.

cases have been published by others. But this is about all that we can boast of since Atlee first led the way for us.

Uterine fibroids are classified according to their relations with the tissues of the uterus. They are called subserous or extra-mural when on its outer surface; interstitial or intra-mural when embedded in and enveloped on all sides by the muscular structure of the uterus; and intra-uterine or sub-mucous when in the cavity of the uterus, with broad attachments to its walls. The first variety is, as a rule, not amenable to surgical treatment. The other two are. Histologically intra-uterine polypi and intra-uterine fibroids are identical, differing only in the manner of their attachment to the walls of the uterus. The polypus is pedunculated, while the fibroid, so called, is sessile; the former is attached to the fundus uteri or to some portion of the inner surface of the uterus by a firm, fibrous band varying in size from half an inch to an inch or more in diameter, while the latter is extensively attached by fibrous and cellular tissue.

It is only within the last ten years that the removal of intra-uterine polypi has been rendered absolutely safe. By the old and clumsy method of ligation the mortality was immense. But by the modern method with the *écraseur*, and by the still easier method of excision with scissors, their removal is positively free from all danger. I have never seen a death, nor have I ever heard of one, from either direct or remote consequences of a properly-performed operation for polypus.

Intra-uterine fibroids are usually, I might say almost always, capsuled. They are sometimes polycystic; but more frequently solid. When cystic, the cysts vary in size from that of a filbert to that of an orange or a cocoa-nut. The solid tumors are generally more easily removed, because their tissue, being more resistant, does not break down so readily under forcible traction.

It is my intention here to speak of the improved methods of removing these tumors when practicable. I say practicable, because there are many cases, perhaps the majority, where operative measures are not called for, and would be unjustifiable. A fibroid is not, *per se*, a dangerous thing. It is never dangerous except when it gives rise to severe hæmorrhages, and then

only are we justified in attacking it by surgical means. If there is no unusual and exhausting loss of blood, it is wiser and safer for the patient to accept her condition as one of infirmity, and to make the best of it. Under these circumstances the tumor is simply a matter of inconvenience, producing temporary but bearable discomfort by mere mechanical pressure on the pelvic organs, and this generally only when the tumor is comparatively small. When it grows large enough to rise above the brim of the pelvis, the patient suffers only as she would with the gravid uterus at a similar state of development.

But, laying aside generalities, I may proceed now to illustrate the principles of treatment by detailing a few cases that have occurred in my practice (private and hospital) since our last meeting :

CASE I.—Mrs. H., aged forty-six years ; mother of four children all grown ; has had menorrhagia for the last seven years. At first it was attended with great pain, but latterly the bleeding has been of a passive character, and painless. A few months before I saw her, she applied to a physician (female), who cauterized what was supposed to be granular erosion of the os. After a while, another physician was called in consultation, and the cauterizations were continued. By-and-by they discovered that it was not a simple case of granular erosion, but a tumor of some sort protruding from the canal of the cervix. The patient soon afterward fell under the care of Dr. E. H. Parker, of Poughkeepsie, who at once recognized the true character of the disease, and sent for me, saying we had to deal with an intra-uterine fibroid. I saw the case on the 6th of July, and agreed with him as to the necessity of surgical interference.

Mrs. H. was completely anæmic. When she was not losing blood, she had a profuse muco-albuminous leucorrhœa from the cavity of the uterus, which was quite as debilitating as the loss of blood. The os tincæ was found dilated to about an inch in diameter ; the rounded, glistening surface of the tumor could be felt and seen on a level with the thinned edges of the os ; the finger could be passed high up into the cavity of the uterus anteriorly and to the left side ; everywhere else the

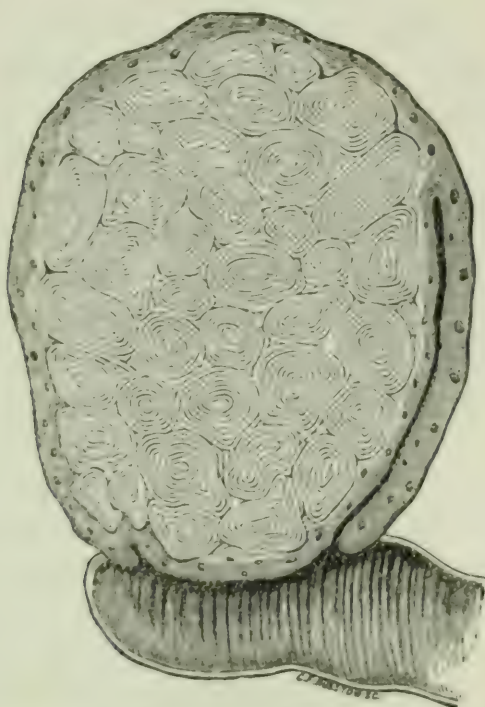
tumor was closely attached to the walls of the womb. Altogether the case was favorable for operation, and we thought it should be done at once. But Dr. Parker had two cases of erysipelas under his care at the time, and we feared to perform the operation at Poughkeepsie. As I was then at Newport for the summer, Dr. Parker sent his patient there for operation, and it was performed on the 26th of July. Dr. Sands, Dr. Engs, and Dr. Watson assisted, and Dr. Harry Sims gave nitrous-oxide gas. It took about two minutes to produce the state of anæsthesia; the operation lasted seven minutes, and in one minute more there was entire consciousness; she was, then, just ten minutes under the influence of the gas. The tumor, about the size of the fist, was enucleated and removed with comparative ease. I did not allow any great loss of blood during the operation, for, as the attachments between the tumor and its capsule were broken loose, a sponge-probang was thrust up along the track of the enucleator to arrest the bleeding. When the tumor was removed, I passed several pledgets of iron-cotton into the cavity of the uterus. They were about the size of the first joint of the thumb, and each was tied with a strong thread to facilitate removal.

The day after the operation, the two lower pledgets were removed; on the second day two more; and on the third the remaining two. Vaginal carbolic washes were then freely used, and in a fortnight Mrs. H. returned home well, and soon regained all the freshness and vigor of robust health.

CASE II.—Mme. de —, of the city of Mexico, aged thirty-eight years; married at thirteen; gave birth to a child at eighteen; had a miscarriage at twenty-four. Soon after this her health began to fail. She had nausea, and occasional vomiting; her abdomen began to enlarge, and she supposed herself pregnant again, notwithstanding the fact that she was regular. In about six months she had a violent hæmorrhage during one of her periods, and this occurred several times at intervals of five or six months. For the last four or five years the hæmorrhages have been severe and prolonged, often continuing from one menstrual epoch to the next. A year ago she consulted the eminent surgeon, Dr. Martinez del Rio, of the city of Mexico, who informed her that she had a large

intra-uterine fibroid, and he sent her to New York for operation. I saw her in June, 1873. She was anæmic, exhausted, and quite nervous from loss of blood. The os tincæ was dilated to about the size of a silver dollar, and the tumor could be seen and felt presenting at the os, but not projecting through it. The finger could be easily passed by the side of the tumor into the uterine cavity, where the tumor was felt to be firmly attached to the walls of the uterus in every direction, except anteriorly (Fig. 1). The sound could be passed along the cavity

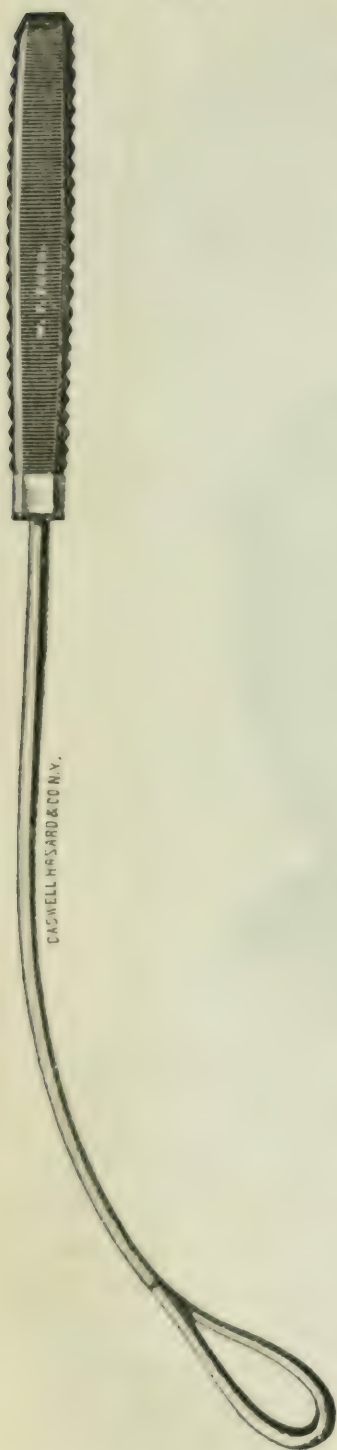
FIG. 1.



between the anterior wall and tumor to the depth of five inches. The tumor was a pure myoma, and altogether favorable for operation—favorable: 1. Because the os was already dilated; 2. Because the tumor was firm and hard (non-cystic), and not liable to give way under strong traction; and, 3. Because it was probably not larger than a good-sized orange elongated by pressure. When Mme. de — arrived in New York, we were passing through the epidemic of puerperal fever, which will long be remembered for its great mortality. Of course, I did not dare to perform such an operation in such an atmosphere, and she was sent to Newport to await my arrival

there. The operation was done there on the 15th of August, 1873, Dr. Samuel W. Francis, Dr. Engs, and Dr. Harry

FIG. 2.



Sims, assisting. To dilate the cervix to its greatest extent, and to facilitate the removal of the tumor, five or six good-sized sponge-tents were passed along the cervical canal the evening before the operation. On their removal twenty hours afterward, the os was considerably larger and more yielding than before their introduction. The tumor was seized at its projecting part with the vulsellum, pulled toward the os externum, and held firmly while with the scissors its capsule was incised just at its junction with the posterior and lateral portions of the cervix. By this means the capsule was opened by a semilunar incision from two and a half to three inches long. The enucleator (Fig. 2) was then thrust up between the tumor and its capsule quite to the fundus uteri, first on one side and then on the other, and then it was moved laterally so as to pass around the tumor, thus breaking up the slender connections by which it adhered to its capsule. This manœuvre finished, the tumor still firmly held by the vulsellum, the tumor-hook (Fig. 3) was passed up along the posterior surface of the tumor and hooked deeply into its substance, thus giving an immense leverage for evulsion. With this power exerted, the enucleator was again passed in every direction between the tumor and its capsule, to be sure

that there were no strong bands between the two. Not-

withstanding all this and in spite of the seeming non-adherence of the tumor, it could not be extracted. It was then discovered that the tumor was too large to pass through the cervix. This made it necessary to incise the cervix with scissors in four different directions quite down to the vaginal insertion. The tumor was then quickly removed, and so suddenly as to fall over the edge of the operating-table.

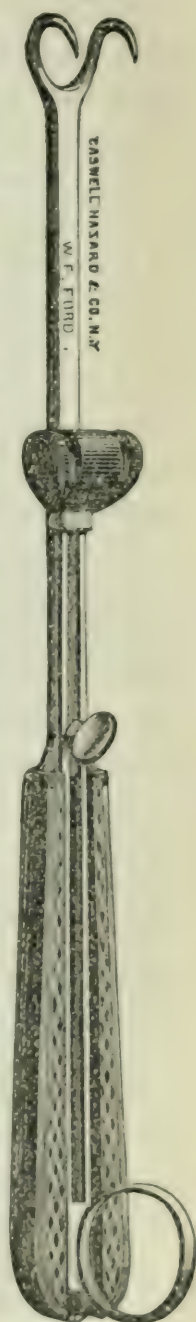
The time of the operation was twenty minutes. Pledgets of iron-cotton were passed to the fundus to arrest the hæmorrhage, which was not profuse. These were removed twenty-four hours after the operation, and the vagina was freely syringed with carbolized water, three or four times a day. In a week there was no discharge whatever from the cavity of the uterus. In a fortnight Mme. de — was able to go out, and considered herself well. In a month the four incisions made in the cervix had healed entirely, and the os presented a perfectly normal appearance.

The cases above related were easy to operate upon, because the tumors had forced their way down and dilated the os and cervix, so that the first stage of the operation had been performed by the efforts of Nature, and enucleation alone was left to the art of the surgeon.

When the os and cervix are in a normal condition, and the tumor is incarcerated wholly within the cavity of the uterus, the process of bringing it down and enucleating it is somewhat tedious—as, for example, in the following cases:

CASE III.—Mrs. S——, aged thirty-five, the mother of four children, the youngest six years old, had been subject to menorrhagia ever since the birth of the last child. Latterly she lost such large quantities of blood that her physician, Dr. John J. Crane, was obliged on several

FIG. 3.



occasions to use the tampon. At last he resorted to the sponge-tent to dilate the cervix, when he found a fibroid firmly attached to the posterior and lateral portions of the body of the uterus. It was supposed to be about the size of a large orange flattened, and wholly above the os internum, which was very much contracted. Dr. Crane was on the eve of leaving for Europe, and he turned his patient over to my care in June last.

Mrs. S. was so weak and exhausted from loss of blood that Dr. Crane thought, with me, that no time should be lost in removing the cause of the bleeding. She suffered greatly from the excessive heat of the city, and we sent her to Newport early in July. The subsequent menstruation was in a measure controlled by tampons of iron-cotton, and by the administration of Squibb's new preparation of ergot, the aqueous extract.

The first step toward getting the tumor away was to incise the cervix bilaterally quite up through the os internum. This was done about the middle of July. The next menstruation would in all probability have been as severe as ever, but she took Squibb's aq. ext. secale cornut., and the cavity of the uterus was firmly tamponed with the iron-cotton. In this way she went through August and September. Soon after the October menstruation sponge-tents were passed to the cavity of the uterus, the canal freely dilated, the finger introduced as a guide, and, with the uterotome, the capsule of the tumor was split longitudinally from above downward for about three inches. The bleeding was profuse, but readily checked by iron-cotton tampon passed to the fundus uteri. The November period was, like the preceding one, controlled or modified by ergot internally, and iron-cotton locally. In December the loss of blood was terrific; the uterus seemed to be large and flabby; the os and cervix were unusually large and relaxed; and to arrest the bleeding it was necessary to pass three plugs of iron-cotton, four or five inches long, and as large as the thumb, quite up to the fundus, and then to pack the vagina very firmly to hold them *in situ*. On their removal forty-eight hours afterward, the os and cervix were found dilated to nearly two inches in diameter; and on the next day the tumor

was projecting to a slight extent through the os into the vagina; and on the following day it was found to protrude farther, and to be in a sloughy condition. The patient's condition was now a very bad one. Her pulse was 146, and temperature $104\frac{1}{2}^{\circ}$, and she was evidently suffering from septic poisoning. As no time was to be lost, assistance was hastily summoned. Dr. Henry D. Nicoll gave ether, and with the assistance of Dr. Crane and Dr. Harry Sims the tumor was removed in twelve minutes. The pulse and temperature each went rapidly down as soon as the semi-gangrenous mass was removed. In a few hours the patient was out of all danger. But she was so exhausted that her convalescence was tedious, and she was not able to be up and about for fully two months. In this case the uterus was filled with iron-cotton after the operation, as in the preceding. It was removed on the day after the operation. It was necessary to wash out the cavity of the uterus twice a day with a double-current catheter for a month or more after the operation. I have often seen the pulse fall eight or ten beats in the minute, and the temperature one degree, and all in ten minutes after washing out the cavity of the uterus. Mrs. S. is now well.

CASE IV.—Mrs. M., from the State of Texas, aged thirty, married ten years, sterile, had had painful menstruation for many years, and for the last five it had been very profuse. Her physician, Dr. Rufus Nott, of Texas, having exhausted the ordinary means of treatment, sent her to me last August for operation. To the touch the uterus felt to be about the size of the organ at the fourth month of pregnancy, but harder and more unyielding. The probe (gum-elastic) passed to the depth of six and a half inches. The tumor seemed to project posteriorly, and to the left side, as felt through the posterior *cul-de-sac* of the vagina. Exploration of the cavity of the uterus, after the use of sponge-tents, showed that the proper cavity of the uterus was on the right, and that the tumor, which was probably as large as the foetal head, was adherent, posteriorly, anteriorly, and to the left side of the uterus; indeed, that it was adherent everywhere except along the right side of the organ. The os and cervix were of virgin form, very small, and barely admitted the passage of a No. 6

bougie. Of course, the first step was, to incise the cervix bilaterally, which was done in August last. Aq. ex. secal. cor. was given during the periods, and at intervals between them.

In October the cervix was dilated with sponge-tents, and the capsule of the tumor was deeply incised for about four inches from above down toward the os internum. Very soon after this the tumor began to encroach upon the neck of the uterus and to dilate the os; and by the middle of December the os was two inches in diameter, and the tumor was presenting on a level with its margins. On January 11, 1874, the os was fully three inches in diameter, and the operation of enucleation was performed. Dr. James R. Wood, Dr. Thomas, Dr. Bixby, of Boston, Dr. Perry, Dr. Baker, Dr. Nicoll, Dr. Harry Sims, and others, were present. The capsule of the tumor was first opened at its junction with the posterior portion of the cervix, then on the left side, and around on the anterior segment of the cervix. Then the presenting portion of the tumor was grasped by the vulsellum and pulled forward, while the enucleator was pushed between the tumor and its capsule quite up to the fundus, anteriorly, laterally, and posteriorly, and then swept around the tumor to break up adhesions that might have escaped the previous thrusts of the enucleator. The tumor was large, and the cervix was not sufficiently dilated to allow it to pass easily, and I was obliged to incise the cervix with scissors in four different directions, quite down to the insertion of the vagina. When I began the operation I expected to finish it in fifteen minutes, but it required nearly an hour. After its removal, the loose shreds of capsule attached to the walls of the uterus were trimmed off with scissors, and the uterine cavity plugged with iron-cotton. Two hours after the operation there was severe hæmorrhage (which was, I suppose, from the circular artery), and it was necessary to make additional pressure with the iron-cotton tampon. These tampons were removed in forty-eight hours, and the vagina was freely washed out several times a day with carbolized water.

The tumor was the largest I have ever removed from the cavity of the uterus, and weighed two pounds less one ounce.

About ten days after the operation there was a sudden discharge of pus from the vagina, which for several days I supposed to be from the cavity of the uterus; but, on careful examination with a speculum, I found that it came from a pelvic abscess on the left side of the uterus which had opened into the vagina at the left border of the posterior *cul-de-sac*. I am glad to say that Mrs. M. is now convalescing.

CASE V.—A lady, forty-five years of age, supposed herself to be undergoing what is called “change of life.” She had had profuse and prolonged losses of blood for five or six years, attended at times with great pain. Prof. Loomis kindly referred her to me. The uterus, to the touch, seemed to be considerably above normal size. The sound passed to the depth of four and a half inches. The os was small, and the cervix indurated. A glairy, yellowish mucus passed from the cavity of the uterus between the periods of menstruation. Dilatation of the cervical canal and digital exploration of the cavity could alone reveal the true nature of the disease. When I removed the sponge-tent I fully expected to find the cavity of the uterus filled with fungoid granulations, to be removed with the curette. But I found a fibroid of unusual hardness attached to the anterior wall of the uterus. The diagnosis being now complete, I determined to try to remove the tumor. Five or six good-sized sponge-tents were then introduced, and on the next day the operation was performed with the assistance of Dr. Nicoll and Dr. Harry Sims. The cervix was well dilated, and the tumor was brought down with hook and vulsellum, but it was impossible to draw it out of the uterus till the os was freely divided into four sections with scissors, as in the cases previously related. The operation was then finished, and the cavity of the uterus plugged with iron-cotton. This was removed on the next day, and the usual carbolyzed vaginal douches were ordered. In a week there was no abnormal discharge from the uterus. In a fortnight the patient was up and about the house, and she was soon in good health. I saw her six weeks after the operation, and the os was normal—not the slightest evidence that it had been incised in four different directions down to the insertion of the vagina. And the same thing was found in all the cases previously related where it was necessary to make these slashing incisions in the cervix.

But intra-uterine fibroids do not always wait for the tardy interference of the surgeon. They occasionally break through the investing capsule, and are forced out into the vagina by the expulsive efforts of the uterus. And, again, they may pass out so gradually and so easily through the slowly-expanding cervix that they are extruded from the uterus without seeming suffering. But, once in the vagina, their presence is often made manifest in a very disagreeable and even dangerous way.

A lady of well-known literary reputation, aged about thirty-seven, the mother of four children, the youngest eight years old, was traveling in the East in 1868. With the exception of some little menstrual disturbance, her general health was good. In Syria she necessarily rode a great deal on horseback. In Jerusalem she had profuse menstruation for the first time. In Rome she was very ill, and sent for a physician, who told her to go to Paris as soon as she could get there. On her arrival in Paris she was very seriously, dangerously ill, and she wrote to her banker to send her a physician. The banker sent his own family physician, who is very accomplished as a physician, but makes no pretensions to surgery. He found that his patient had had hæmorrhages from the uterus, that she was completely bloodless, and in a very exhausted condition. Besides this, there was a fetid discharge from the vagina, very suggestive of malignant disease. The doctor called me at once to see the case with him. Judging alone from the obnoxious vaginal discharge, I did not wonder that he thought she had a cancer. On examination, I found that the noisome discharge came from a fibroid in the vagina, which had passed out of the womb, and was in an advanced state of decomposition. As she was rapidly dying of septic poisoning, no time was to be lost; so we at once proceeded to remove the gangrenous mass by severing its attachments to the posterior wall of the womb: and thus a valuable life was saved, that is to day an honor to literature and to our country.

In 1869, Dr. John J. Crane asked me to see a lady with him, who had, as he supposed, an intra-uterine fibroid. The uterus was as large as at the fourth month of gestation. She

was of a consumptive family. She had hæmorrhoids and fistula in ano, and was losing large quantities of blood at each menstrual epoch, and she had a cough and some lung-trouble. She was exceedingly frail and delicate, and, as her family had all died of consumption, Dr. Crane was afraid to cure up the rectal trouble, and more particularly as one member of the family had died in consequence of operations he had performed on the rectum. With such a family history, I was quite as unwilling as Dr. Crane to interfere rashly with the case. So we agreed to use the sponge-tent, to operate if we found a polypus, but to do nothing if it turned out, as he expected it would, to be a fibroid. The dilatation of the cervix revealed a large fibroid broadly attached to the anterior wall of the womb. According to previous understanding, we simply injected a drachm of the tr. of iodine into the cavity of the uterus. A few hours afterward our patient was taken with violent pains—real labor-pains—that continued all night and during the following day. Late in the afternoon the pains ceased all at once, and something protruded from the vulva, which gave rise to a suspicion that Dr. Crane and myself had unwittingly been guilty of producing an abortion. Dr. Crane immediately sent for me, and on my arrival we found an enormous fibroid completely filling the vagina, and projecting from it beyond the vulva. It was firmly attached to the anterior wall of the uterus by strong fibrous bands, which were divided with great difficulty. Our patient made a rapid recovery, and now bids fair to outlive her family inheritance. Her recovery was due to a lucky accident, and not to the skill of her physicians.

Prof. Crosby, of Bellevue Hospital Medical College, during a visit to Vermont, saw a case of menorrhagia. After an examination he told the patient that the bleeding was due to a fibroid of the uterus. He prescribed large doses of elixir of vitriol, to be taken three times day. She took the medicine regularly for some months; the hæmorrhage was controlled; and she had regained her usual degree of health, when the doctor happened to see her again. He was so much surprised to see the change effected, that he asked to examine the state of the womb. His surprise was increased when he found the

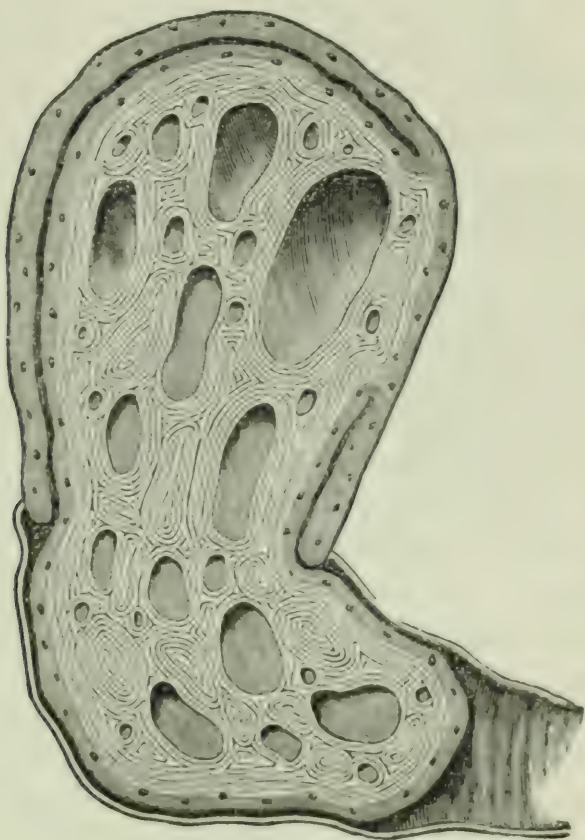
uterus restored to a normal state, and a fibroid as large as an orange lying loose in the vagina. Such cases as this are to be found, I believe, recorded in the books.

So far we have been speaking of the simple fibroid—the pure myoma of the uterus. The fibroid-cystic myoma grows to a great size, and I have seen them as large as a seven months' foetus.

CASE VI.—On December 13, 1873, Dr. James O. Smith, of New York, sent Katharine Hogan to the Woman's Hospital, who was in a bloodless and most exhausted condition. She was forty-five years old, and a widow six years. In early life she had painful menstruation, and was sterile. For the last four or five years she had lost large quantities of blood, but the bleeding ceased in June last, since which time there has been an abundant watery mucous discharge from the vagina, which has latterly become very offensive. She was perfectly blanched, and anæmic to the last degree. The uterus was greatly enlarged and reached above the umbilicus. The vagina was filled with an elastic fibro-cystic tumor the size of the foetal head (Fig. 4). The cervix uteri was dilated to its fullest capacity, as in labor when the head has passed into the vagina and rests on the perinæum. That portion of the tumor to be seen in the vagina was of a motley grayish color, and evidently in an incipient state of gangrene, giving out a decomposed, purulent secretion of bad odor. A gum-elastic bougie was passed its full length into the cavity of the uterus. The operation was performed on the 15th of December. The vaginal portion of the tumor was broken down with scoop and fingers and clawed out piecemeal. The hand was then passed into the uterus, and with the aid of the enucleator and scissors the whole of the mass, quite as large in bulk as a seven months' child, was removed in twelve or fifteen minutes. At one time I thought I had thrust the enucleator through the walls of the uterus into the peritoneal cavity, but, by passing the hand farther up into the cavity of the uterus, I found that it had simply entered and broken down an immense cyst. After the removal of all the solid portions of the tumor, I passed long scissors by the side of the hand and cut away all the loose fibrous shreds by which the tumor was so extensively

attached to the anterior and lateral portions of the walls of the uterus. There was severe hæmorrhage, and it was necessary to hasten the operation, and to promptly tampon the uterine cavity with iron-cotton. Two sources of danger attended this operation: 1. Hæmorrhage from large venous sinuses unavoidably opened by the operation. 2. Septic poisoning from decomposing fluids retained in the cavity of the uterus

FIG. 4.



afterward. To avert the first danger, the operation was necessarily rapid, and the arrest of bleeding was as necessarily prompt and efficient. To prevent the second, it was important to remove the tampons from the uterine cavity as soon as it could be safely done after the bleeding was permanently arrested, and then to freely wash out the cavity of the uterus. The whole of the vaginal tampon was removed eighteen hours after the operation, and in twenty-four hours the uterine tampon was removed. Before this was done, the pulse was 132, and temperature $103\frac{1}{2}^{\circ}$. After its removal

a thorough irrigation of the uterine cavity was effected by passing a gum-elastic catheter to the fundus and attaching it to a Davidson syringe. A large quantity of carbolized warm water was thrown in, greatly to the comfort of the patient, and in ten minutes afterward her pulse fell 12 beats (120), and temperature one degree ($102\frac{1}{2}^{\circ}$). Dr. Baker, house-surgeon to the Woman's Hospital, had charge of the case, and he washed out the uterus with carbolized water every two hours for the subsequent twenty-four hours, when her pulse fell to 96, and temperature $99\frac{1}{2}^{\circ}$. On the next day he injected the uterus every four hours, and on the sixth day every six hours. By this time the discharge became purulent, and he washed out about two ounces of laudable pus at each sitting.

17th Day.—The uterus is now but three and a quarter inches deep.

19th Day.—Has been doing well ever since operation till now. She complained of "feeling sick all over," and this afternoon she had a chill, followed by intense fever. For six hours her pulse was 160, and temperature 106° . As she had never had intermittent fever, it was inferred that the attack was pyæmic. She was put on quinine (24 grs. daily), and on washing out the uterus it was found to be full of intensely-offensive matter. As there was no return of the chill, it is altogether probable (I may say certain) that this retained matter was the sole cause of the violent constitutional disturbance. Dr. Baker saw that there was no spontaneous evacuation of the vitiated secretions from the cavity of the uterus, so he went to work to adapt a drainage-tube to secure a constant drain from the uterus. He was fortunate in fitting a block-tin tube about three inches long which remained permanently in the canal of the cervix, whereby the cavity was kept constantly drained.

From this time there was no other accident. At the end of ten days, Dr. Baker found that there was no more pus coming from the uterus, he removed the drainage-tube, his patient was soon sent home in a thriving condition and has continued well since.

I feel sure that this poor woman owes her life wholly to the untiring attention and skillful management of Dr. Baker.

But let me not lead you to think that all intra-uterine fibroids are curable by operation, or that operative procedures are without danger. While I have brought forward this formidable list of successful cases, occurring in a comparatively short space of time, it is my duty to show you the obverse of this picture.

In August last I operated on a case in the Woman's Hospital, which was in all particulars like the one just described. The size and character of the tumor, the attachment to the walls of the uterus, the dilatation of the cervix, the descent into the vagina, the incipient decomposition, and attendant discharge, the method of operation by breaking down the tumor and clawing it out with the hand, and the manner of arresting the subsequent hæmorrhage, were all precisely as in the case before described; and yet my patient died on the fourth day after the operation.

A *post-mortem* examination showed that the tumor had been neatly and cleanly removed. But, just where the tumor was attached to the walls of the uterus, a cyst was found holding six or eight ounces of decomposed sero-pus, the absorption of which was doubtless the septic cause of death. If this flattened cyst could have been detected, and opened at the time of operation, I would, in all probability, have had the happiness of making a different report of the case.

In May last, a lady came to see me from Brooklyn who had had menorrhagia for five or six years. She was forty-two years old, the mother of three children, two of them grown, the youngest six years old. The os tincæ was dilatable, and so was the cervix, which easily admitted the finger to the os internum. But this was very much contracted, and of gristly hardness. Depth of the uterus seven inches and a half. A sponge-tent revealed a fibroid, as large as the fetal head, attached to the whole anterior surface of the body of the uterus. She was under observation for a long time before I dared to do any thing radical for her relief. It was difficult to control or modify the hæmorrhages, and they exhausted her so much that I could not get her in proper condition for operation till it was time for the flow to come again, and in this way she went through the hot summer months. In October I in-

roduced sponge-tents, intending to incise the capsule, and make an effort to partially enucleate the tumor and draw it down against the os internum. I had no hope of doing more. I should have mentioned that she was a very large woman, very anæmic, and somewhat dropsical, having some œdema of the lower extremities. In this connection I am sorry to say that I neglected to analyze the urine, taking it for granted that the œdema was due to the loss of blood. On the 15th of October she was put under the influence of ether, the cervical canal being fully dilated with sponge-tents. On their removal I made incisions into the capsule of the tumor, longitudinally and transversely, just above the os internum, but the hæmorrhage was so profuse that I could do no more, and I was obliged to fill the cavity of the uterus with iron-cotton to arrest the bleeding. I have often been alarmed at the dangerous effects of chloroform, but never before by those of ether. But in this case the coma was more profound than usual, the stertor more aggravated, and the lividity of the head and face as marked as when we give nitrous-oxide gas. I cannot say that she ever fully recovered from the effects of the ether. She was somewhat incoherent during the night, and on the following morning (ten o'clock) she went into convulsions, from which she never recovered, and died in eight hours, with all the symptoms of uræmic poisoning. She did not die of the fibroid, nor of the operation, nor of loss of blood, nor of shock, but simply of uræmia, provoked or called into action by the effects of etherization.

One more fatal case. A sponge-tent was introduced into a narrow cervical canal to explore the cavity of the uterus, in which there was a fibroid the size of the foetal head. On the following day a chill ushered in the danger, and the patient died on the seventh day. A *post-mortem* examination revealed an abscess, which had burst into the peritoneal cavity, producing peritonitis.

Dr. E. H. Parker, of Poughkeepsie, sent me a patient in October, 1872, who had a uterine fibroid of enormous size. The os was very small, and the cervix was small and indurated. A sponge-tent was introduced, and in twelve hours it was necessary to remove it. The most violent constitutional

disturbance was set up; my patient was exceedingly ill for six weeks, and barely escaped with her life. But the profuse hæmorrhages have ceased, and she is now enjoying a fair degree of health.

While my first series of cases demonstrates very conclusively the results to be accomplished in properly-selected cases, the second proves as conclusively the dangers that await us at every turn. Still I think we have made good progress, and I look upon the enucleation and removal of intra-uterine fibroids as one of the great achievements of modern surgery.

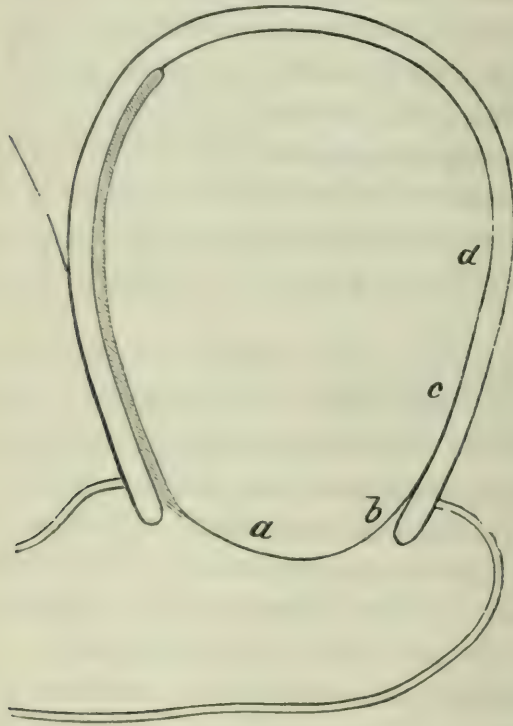
When Nature attempts the expulsion of any foreign body from the cavity of the uterus, whether it be a foetus or a fibroid, the first step toward accomplishing it is a sufficient dilatation of the os. So, in removing an intra-uterine fibroid by artificial means, we must imitate the work of Nature. We must be guided by certain fixed principles if we expect to succeed: 1. The cervical canal must be freely open. 2. The tumor must be freed from the restraint of its investing capsule.

When the capsule of the tumor is incised, we expect the tumor to come slowly down and gradually dilate the cervix. The enucleation of the tumor should not be attempted till we feel pretty sure that the cervix is nearly sufficiently dilated for the tumor to be brought through it. And not then, till the rounded end of the tumor presents on a level with the borders of the dilated os. If we attempt enucleation with the lower portion of the tumor above the os internum, failure will be the inevitable result, that is, if the tumor be large.

To illustrate the process of enucleation, let us suppose a case. Let us suppose that we have to deal with a fibroid as large as an orange or as the fist, attached to the posterior and lateral walls of the uterus; that the anterior wall is free from attachments to the tumor; that the os is dilated to $2\frac{1}{2}$ inches or 3 inches in diameter; that the tumor is a solid myoma; and that it can be seen and felt on a level with the edges of the expanded os tincæ (Fig. 5). It will be well to introduce four, five, or six medium-sized sponge-tents, six or eight hours or more before the operation. These will soften the cervix and dilate the canal still more, and thus facilitate the operation.

With such a case as this we may promise a speedy, safe, and successful operation. And now for the process of operating: 1. The patient is to be placed in the left lateral semi-prone position, and the vagina opened with a Sims speculum. 2. The presenting portion of the tumor is to be seized at *a*, Fig. 5, and pulled forward with a strong vulsellum. 3. The capsule of the tumor is to be opened with scissors at the place of its attachment to the posterior and lateral portions of the cervix (at *b*, Fig. 5), and here we must be sure not to dissect the capsule

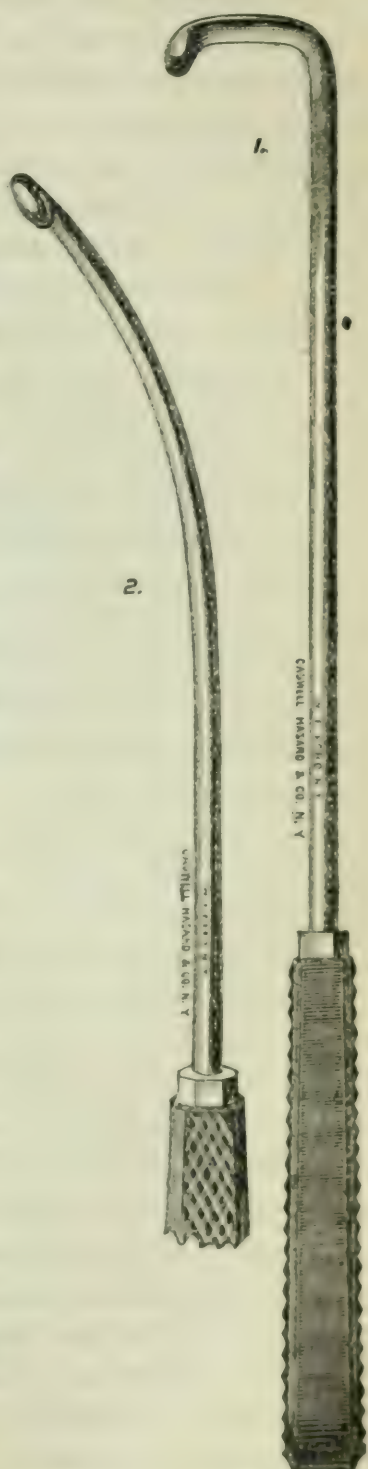
FIG. 5.



from the cervix, but to cut squarely into it, and then pass the index-finger through the opening thus made between the tumor and the capsule, which should be left attached to the walls of the uterus. The capsule should be divided all around, and in close proximity to the borders of the cervix. There is no better enucleator than the finger, but, as it cannot reach to the fundus, it is necessary to supplement it with something that can, and this brings us to the fourth stage of the operation. 4. While the tumor is firmly held and pulled forward by the hook or vulsellum, the enucleator (Fig. 2) is rapidly pushed up

between the tumor and its capsule, which remains attached to the walls of the uterus. It is carried quite to the fundus. It is then withdrawn and pushed up in another quarter, and this is repeatedly done, and when the loose cellular tissue and strong fibrous bands are thus lacerated, the instrument is carried circularly around the tumor so as to insure a complete disruption of all connecting bands between it and its capsule. Fig. 2 represents the enucleator that I formerly used. It is a steel rod twelve or fifteen inches long, looped at the end. This is to prevent all danger of running the instrument through the fundus when it is thrust up high. But in Case IV., page 345, I found it impossible to break up the strong fibrous bands with this instrument, and so I have modified it for the better, I think, by substituting a blunt-hook bent at right angles with the shaft for the loop, Fig. 6. This can be carried to the fundus with the same impunity as the other, and then in withdrawing it we can make the hook most efficient in tearing up the firmest fibrous bands. Although I have had no opportunity of trying this instrument, I am satisfied that it will prove far more powerful than the old one and quite as safe. The shaft of the instrument is slightly curved, as shown in 2, Fig. 6. When the adhesions are all satisfactorily broken up with the enucleator, we are ready for the fifth and last stage of the operation, that of the evulsion of the tumor.

FIG. 6.



5. And here, while the tumor is still forcibly pulled forward with the vulsellum, we pass a double hook (the tumor-hook), Fig. 3, up along the posterior surface of the tumor as far into the cavity of the uterus as possible, say to *c* or *d*, Fig. 5, and this is the power with which the end is to be attained. With the hook the tumor is pulled down and slightly rolled on its vertical axis, while we still use the enucleator to separate any unbroken bands of attachment that may have evaded our previous efforts. As the tumor gradually yields to traction, and slowly comes down, another hook is passed farther up and hooked into the tumor above the first, and, by traction with this, combined with the continued efforts of the enucleator, the tumor rolls out so suddenly that it seems almost to leap through the vulva. In some instances it rolls on its vertical axis to such a degree that the part attached to the fundus is really the first to pass through the vulva. This is of course when the instrument is passed up high enough to hook the tumor near the fundus. But the tumor may be too large to pass through the os even after all attachments are freely broken up; then we must resort to incision of the cervix with scissors down to the insertion of the vagina, as already described in the preceding pages.

The tumor-hook has a hard rubber shield, which slides along the shaft, and can be pushed up to the hook when we wish to liberate it from its hold, for the purpose of removing it, or of changing its point of action.

On the evulsion of the tumor, the uterus instantly contracts, just as it does in expelling the foetus. Any loose shreds of membrane felt in the uterus are to be cut off with scissors. In most cases, the hæmorrhage, after this operation, is slight. In a few it is severe. It is, at all events, safe to guard against any danger of this sort. For this purpose, I pass a plug of iron-cotton into the cavity of the uterus, and quite to the fundus, which is to be held *in situ* by a vaginal tampon. All of this should be removed as soon as possible—say in twenty-four or thirty-six hours after the operation—in less time, if there are any evidences of septic poisoning. The iron-cotton is made in this way. Take the finest purified cotton-wool,¹ such as is used by jewelers and dentists, wet it thor-

¹ This cotton-wool is found at Caswell, Hazard & Co's.

oughly with simple water, squeeze all the water out, and then saturate it with a mixture of liq. ferri subsulphatis and water (one part to two), press it out into layers an eighth of an inch thick, more or less, about the size of the hand; these layers are to be pressed between the hands, or on the side of the bowl or vessel containing the mixture, till they are nearly but not quite dry; and then they are to be stuffed into a large-mouthed bottle, and kept ready for use. A little of the fluid may be poured on the iron-cotton in the bottle, to insure a sufficient dampness, and then the bottle is to be securely corked. When we wish to use the iron-cotton, a sufficient number of wads is to be removed from the bottle, and each one is to be spread out into sheets, and subdivided into thinner layers, as may be needed. Formerly, I pushed the iron-cotton, tied with strong thread and rolled into little balls, up into the cavity of the uterus with forceps; but I soon found that this was not the best plan either for introduction or removal. The easiest and best method is to take a strong bit of whalebone, twelve inches long, or more, tapering to a point, smoothly polished, and slightly curved near its tapered end. If we wish to introduce a tampon into the cavity of the uterus, four, five, six, or even seven inches long, that much of the whalebone rod, previously smeared with lard or cold cream, is to be wrapped with sheets or layers of iron-cotton till the tampon is of the requisite size. It may be made as large as the thumb, or twice as large, gradually tapering to the end. It is then to be smeared with lard or cold cream, and passed up to the fundus uteri. If necessary, another smaller one, quite as long as the first, may be passed by the side of the first one. I have often introduced two or three before I felt sure of arresting the bleeding. These are to be held *in situ* by two or three wads of iron-cotton placed over the os, and secured there by a firm tampon of plain cotton, wet with water, and squeezed dry. In a few hours—ten or twelve—the vaginal tampon must be removed, and the uterine tampon should be removed in twenty-four hours, or, at the farthest, thirty-six hours.

FIG. 7.

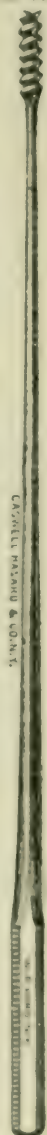


Fig. 7 represents a tampon-screw for removing tampons, whether vaginal or uterine. Place the patient on the back; introduce the left index-finger in the vagina; pass the screw in by the finger; twist round till it takes firm hold of a wad of cotton, which may then be pulled out. In this way every portion of the tampon may be quickly removed without fatigue or much discomfort to the patient. That portion of the tampon in close proximity (the iron-cotton) to the cervix will be removed with greater difficulty, because of its firm adhesion to the parts in contact with it. The tampon removed, the vagina must be thoroughly washed out with warm carbolized water, and, if there is any evidence of septic poisoning, the cavity of the uterus must be thoroughly cleansed by throwing carbolized warm water freely into the cavity quite to the fundus.

ART. II.—*Urethrotomy, External and Internal combined, in Cases of Multiple and Difficult Stricture; with Remarks on the Urethral Calibre.* By FESSENDEN N. OTIS, M. D., Clinical Professor of Venereal Diseases in the College of Physicians and Surgeons, New York.

IN the early part of the year 1872 two cases of urethral stricture presented in my service at the Strangers' Hospital, which, from the fact that the first was the subject of impassable stricture at the bulbo-membranous junction, and that the second was suffering from a long, close, perineal stricture, admitting only the finest whalebone filiform bougie, and was further complicated by the presence of several perineal fistulæ, were decided to be appropriate cases for the external or perineal incision. The method of operation employed differed in some respects from that usually performed. The practice approved by authorities in such cases is to cut down upon a sound or other instrument which has been introduced through or down to the point of stricture, and then from without to incise freely all stricture-tissue until an instrument, sound or catheter, of the supposed normal dimensions of the urethra, can be readily passed through the urethra into the bladder.

The modification of this procedure, in the cases above alluded to, consisted in making the external perineal incision in great measure subsidiary to the operation of internal urethrotomy. This plan was determined on for the first case with the idea of including in the same operation several strictures which were present in the straight portion of the urethra, as well as the impassable one for which the perineal incision was demanded, and for the second, to avoid the necessity of laying open the scrotum in the division of the long stricture, which was found to pursue a tortuous course through a mass of indurated tissue traversed by the perineal fistulæ.

The preliminary steps in this modified operation were taken as if the ordinary perineal section had been contemplated. An incision was then made down upon the anterior face of the stricture, aiming to enter the urethra by as small an opening as possible, and through this opening, as a new point of departure, the endeavor was made, in the first case, to introduce a fine, soft, filiform guide through the posterior stricture. Succeeding in this, the staff of Maisonneuve was entered at the meatus and passed down through and past the perineal incision and into the bladder; blades of the instrument, Nos. 2 and 3, were then slid down the staff in succession, cutting on the superior wall of the canal and dividing all remaining strictures. A large silver catheter was then passed into the bladder. In the second case the same plan was pursued, with like result, as far as the stricture posterior to the incision was concerned, and a large bougie was passed from the incision into the bladder: but there still remained the long and close stricture anterior to the perineal opening. A filiform guide was then passed from the meatus urinarius through the stricture and out of the perineal incision; the staff of the instrument of M. Maisonneuve was then screwed upon it and also passed through the urethra and out of the incision; this was followed by the blades Nos. 2 and 3 in succession; after which a full-sized catheter was passed through the entire urethra into the bladder.

The result of these operations proved highly satisfactory in both the cases alluded to, detailed accounts of which were published in the *New York Medical Record* of April 15, 1873.

Among the advantages which it seemed to me might be legitimately claimed for this modified perineal section, were—1. That it methodically included in the same operation all points of stricture in the presenting urethra, with only a limited division of the external urethral walls, and yet one sufficiently extensive for the free discharge of urine and of the fluids resulting from the operation. 2. That all divided strictures, anterior to the perineal opening, were protected from contact with the urinary secretion after operation; thus obtaining the advantages of each operation, viz., external section and internal urethrotomy, and at the same time lessening the disadvantages if not the dangers of each as separately performed. With the view of illustrating still further the value of the procedure above described, and in order to call your attention to some important imperfections in the modes of procedure ordinarily pursued in the treatment of urethral stricture, I beg leave to present the following case:

On the 31st day of July last, Mr. W. C. H., merchant, aged thirty-three years, presented at my office, with the history of a gonorrhœa thirteen years previous. This was severe in its accession, and, through the aid of strong injections, continued in a highly-inflammatory stage for fully one month. It was supplemented by a free, almost painless muco-purulent discharge, which, in spite of a variety of treatment, internal and by injections, continued, in a greater or less degree, through all the succeeding twelve years and up to the present time. He had his first trouble in urination seven years ago, after excess in wine and sexual indulgence. This resulted in an attack of retention of urine, which was relieved, only after several hours' effort on the part of the surgeon, by the introduction of a flexible filiform catheter. From that time he had frequently been obliged to resort to the introduction of the catheter, but had never since suffered from retention. For the last two or three years he had been troubled with occasional attacks of intermittent (urethral?) fever, but was not aware that he had ever been exposed to any malarial influences.

He passed his water *guttatim*, but says that, occasionally, he passes it in a fine, short jet, and that his condition in this respect has not varied materially for the last five years.

Examination showed the external genito-urinary apparatus fully developed; penis in flaccid condition, three inches in length, and three inches in circumference; from this I estimated the normal calibre of the urethra to be No. 30 f. Bulbous sounds detected stricture at the meatus, extending one-third of an inch, measured by No. 22 f.; one at one inch, No. 19 f.; one at two inches, No. 15 f.; one at three inches, No. 10 f.; six distinct bands from three inches to four and a half, defined by No. 8 f.; beyond four and a half inches, No. 1 filiform passes to six and a quarter inches; $\frac{1}{2}$ m. whalebone, closely hugged, is finally arrested at seven and a quarter inches. Examination of the urine shows freedom from albumen, an occasional pus-globule, a few epithelial scales from the urethra and bladder; none from the ureters or pelvis of kidney. No casts. The foregoing measurement of stricture and condition of urine were rehearsed from time to time without the appreciation of any marked changes, and with no further progress toward entering the bladder up to November 4, 1873. On this date an operation was decided upon. Present Dr. George A. Peters, Dr. George W. Ives, the patient's family attendant, and Dr. J. De Forrest Woodruff.

As the initial step in the anticipated operative procedure, ten grains of quinine and one-quarter grain of morphine were administered. The patient was then placed under the influence of ether, and the calibre and location of each of the strictures were verified (as compared with the measurements already given) by the use of bulbous sounds and bulbous filiform bougies. It was then decided that the modified perineal section was indicated as affording promise of most rapidly and certainly restoring the urethra to its normal calibre.

No. $\frac{1}{2}$ whalebone filiform bougie was passed down to six and a quarter inches, beyond which it could not be persuaded. With this as a guide (which was skillfully managed by Dr. Peters), I made an incision from a point just behind the scrotum to within an inch of the anus, cutting carefully down in line with the centre of the sub-pubic arch, until I came squarely upon the whalebone guide. At this point in the operation the knife was laid aside, and with No. 1 silver-grooved probe, entering the urethra through the incision from before back-

ward, I passed it readily into the bladder. I then introduced the staff of the urethrotome of M. Maisonneuve alongside the probe into the bladder. A slight pressure accomplished this, when the probe was withdrawn, and the largest blade of M. Maisonneuve (capacity 22 f.) was passed, distinctly arrested at three points on its course, and, on withdrawal, a 20 f. catheter was introduced. No urine flowed, although the end of the instrument was felt to be free in the bladder. This was withdrawn and found to be obstructed by a clot, but contained urine. No. 24 was substituted, with precisely the same result. It was then concluded that the curved catheter passed up above the line of urine present. No. 24 straight catheter was then substituted, and the clear urine flowed freely through it. The straight catheter having been closely embraced on entering, indicated some persistence of stricture. I then introduced a straight, probe-pointed bistoury along it, and incised dense cicatricial tissue for fully an inch; withdrew the catheter and passed No. 31 f. steel sound through the external incision back into the bladder.

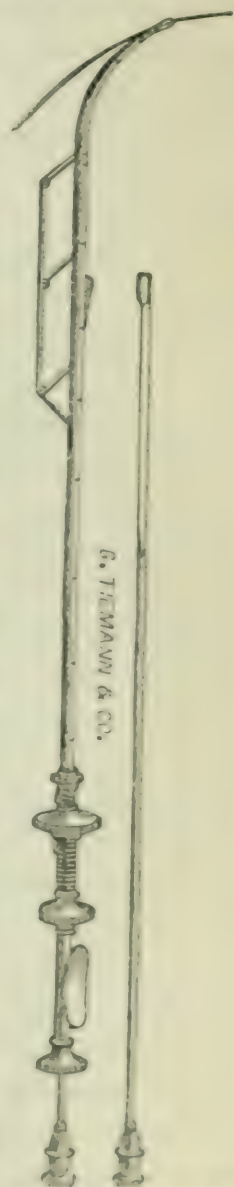
The next step in the operation, after thoroughly incising the stricture at the meatus, was the passage of the $\frac{1}{2}$ m. filiform whalebone guide through the urethra, from the meatus down to and out of the perineal opening, then sliding down upon it the staff of a Maisonneuve (which was perforated at the extremity for this purpose),¹ it finally emerged from the perineal incision. The smaller blade of the urethrotome was then driven slowly down the staff, arrested abruptly at each stricture, and requiring all the force which could be used without bending the shaft of the knife, before its passage through the spongy portion of the urethra could be effected. This was followed by a blade of the second size, with much the same results. A passage of the third and largest blade was then attempted, but this, after passing with great difficulty, arrested at each of the strictures, up to three inches, was here arrested; and after a thorough trial, in which I was efficiently supported by Drs. Peters and Woodruff, it was found impossible, on account of the density of the opposing strictures, to divide them with this instrument. The staff of

¹ The filiform traversing the entire length of the staff.

Voillemier's divulsor was then introduced through the strictures and out of the perineal opening, and rapid divulsion made with the largest shaft (No. 30 f.). On examining the results of this last procedure, it was found that 28 f. bulbous sound was arrested at two inches. No. 26 passed, and defined the posterior face of the stricture at two and a half inches; the same instrument was arrested again at four inches, finding slight resistance for half an inch, then passed freely down to the perineal incision. The (my) small dilating urethrotome was then introduced through the posterior stricture, turned up to 30 f., and the narrow blade of the instrument drawn through it. This urethrotome was then adjusted to the anterior stricture, which was in like manner incised from four inches to four and a half (viz., about one-half inch). No. 31 steel sound was then easily passed down through the entire urethra into the bladder; thus evidencing—as much as the introduction of an ordinary steel sound can do—complete division of all the strictures.

The patient rallied quickly from the effects of the ether, having been under its influence just one hour and three-quarters. The hæmorrhage occurring during the operation was slight, only two superficial vessels requiring ligature. At the end of a half-hour there was not the least oozing from either the wound in the perinæum or from the meatus; there was no complaint of pain subsequent to the anæsthesia; and, as I was leaving him, he emphatically expressed himself as feeling "*bully*."

From the date of the operation, November 4th, until the 16th, the patient, who was seen daily by either Dr. Ives or myself, had not the least untoward symptom. He had an average pulse of 76, and temperature not above 98½°. His



Dilating Urethrotome.

urine, over which he had complete control, was passed *entirely through the perineal opening* for the first three days, after which a small portion found its way through the anterior section of the canal. A conical steel sound, No. 24 f., was now (six days after the operation) passed through the extent of the urethra, and followed easily by Nos. 25 and 26 f. A slight gush of blood followed No. 26 f., but stopped in a few moments. On the 12th passed Nos. 28 and 30 f.; patient, as on the previous occasion, doing well; says he has not had an ache or a pain since the performance of the operation. Hæmorrhage occurred on the next day, following the act of micturition; this was evidently from about the middle of the spongy portion. Dr. Ives was called; eight or ten ounces of blood were lost before it was completely arrested.

14th.—Tenth day after operation. Wound in perinæum closing healthily; passes water about equally through it and through the urethra anterior to it; feels well, eats well; walks about his room, or sits in his arm-chair, with equal comfort. No further instrumental procedure was had until two weeks subsequently (*viz.*, December 28th), when he called at my office, saying that he felt quite well in every respect, that his stream was full size, and that only a few drops came through the perineal opening; he had gained several pounds in weight, and was looking in good condition. Examination of the urethra detects a recontraction of the stricture at one and a half to two inches from the meatus, 17 f.; rest of canal apparently clear. Ordered ten grains of quinine.

December 4th.—Pass 17 f. easily, then 19 f., which was closely hugged.

6th.—Find the stricture at from one and a half to two inches composed of two firm bands close together; introduce small dilating urethrotome; expanded it to No. 28 f. with difficulty, on account of the great density of the strictures; draw the blade of the urethrotome through them from behind forward, and pass 26 f. conical sound readily down into the bladder. No. 26 f. bulb passes down to the membranous urethra and returns, without giving any positive evidence of further recontraction at any point. Patient took ten grains quinine and then started for home, three miles distant, in the

cars, with directions to keep quiet for the remainder of the day.

Two days subsequently (viz., December 8th) patient reports that there had been no hæmorrhage, no disturbance nor discomfort whatever following the operation, except slight smarting on urination; pass 25 and 26 f. conical sound with ease.

9th.—Patient calls to say that he had a smart chill, followed by fever and sweats, coming on about five hours after the introduction of the sound yesterday. Ordered five grains quinine to be taken three times a day.

12th.—Patient reports himself in good condition, having had no further trouble; a few drops of urine still exude from the perineal opening during micturition, but he passed *per urethram* a full and comfortable stream; 28 f. passes readily through the entire urethra.

15th.—Perineal incision completely closed; discharge quite gone; patient makes a full and satisfactory stream; repeat passage of 28 f.

22d.—Pass 28 f.; 29 f. attempted, but finds resistance from three inches increasing to four and a half; smart bleeding followed the withdrawal of 29 f. Ordered ten grains of quinine.

29th.—Patient reports that, on the morning following the passage of 28 f. and the partial passage of 29 f. at his last visit, he had a succession of severe chills, and bleeding with stoppage of water about half the length of the penis, after each urination; finally a clot was expelled, and he had no further trouble. To-day a very sensible contraction is found at three inches, which permits only the passage of 23 f.

January 8th.—Examination with bulbous sound No. 24 finds a recontraction at one and a half inch; one at two and an one-eighth, which arrests it; 17 f. only will pass, and is held on return at three inches. After which 23 f. conical sound is passed through the urethra without force, and followed with ease by 24 f.

13th, 14th.—Defined recontraction at two and a half to two and three-quarter inches; pass 24 f. and 25 f. with ease; from this date up to the present no examination has been made, and the patient, who appreciates the fact that there are features of rare interest and value to our profession in his case,

has kindly consented to submit himself to an examination of his present condition in your presence.¹

It will be worth our while to pass in review some of the most salient points in this case, several of which seem to me to possess a rare interest and value.

First in order seems to be the occurrence of an extraordinary number of distinct strictures in the same urethra. One at the meatus, defined by bulbous sound No. 22 f.; one at one inch from the meatus, defined by bulbous sound No. 19 f.; one at two inches from the meatus, defined by bulbous sound No. 15 f.; one at three inches from the meatus, defined by bulbous sound No. 10 f.; six distinctly-recognized bands from three to four and one-half inches, No. 8 f.; one apparently extending from four and one-half to six and one-quarter inches, permitting the passage of only No. 1 f. to six and one-quarter inches, and from this to seven and one-half inches, hugging one-third closely; three bands distinctly arresting the blade of the urethrotome when passing from the perineal urethral opening backward through the membranous portion of the canal: this makes in the aggregate *fourteen strictures*, distinctly defined and recognized by each of the gentlemen present and assisting in the original operation.

In order to appreciate the rarity of this point in regard

¹ In order to facilitate the examination and to relieve the patient from the annoyance of repeated explorations, a committee, consisting of Prof. Alfred C. Post, Dr. James M. Minor, and Dr. L. De Forrest Woodruff, was appointed by the President of the Association to examine the case of Mr. —, presented by Dr. Otis. No. 17 f. bulbous sound was first carefully introduced by Prof. Post in passing it down the urethra; this was distinctly arrested at the points of stricture, at two and one-half and two and three-quarters, before mentioned, and also as distinctly defined on withdrawal of the instrument. The result was likewise confirmed by the remaining members of the committee. Dr. Otis then introduced, in full view of the Society and without force, No. 24 f. conical steel sound through the strictures and into the bladder, the patient asserting that not the least pain was occasioned by this procedure. The removal of No. 24 f. was immediately followed by No. 25 f. with the same ease and freedom from discomfort. The attention of the Society was then called by Dr. Otis to the interesting and important fact here demonstrated, that, while the bulbous sound No. 17 f. defined the strictures distinctly, No. 25 f. steel sound failed to give any evidence of their presence.

to multiple strictures, I will quote from a late edition of Sir Henry Thompson's work,¹ concerning the number of strictures found in a single urethra: "Occasionally," he remarks, "several separate strictures may be observed in the same subject. John Hunter records an instance where he met with *six* strictures in one urethra: Lallemand mentions one with *seven*. Colot saw one with *eight*. Ducamp says there are rarely more than two, but that he has seen *four* or *five*. Boyer thought that *three* could exist together. A case is reported by Leroy D'Etiolles in which he found *eleven*; "but," Sir Henry further remarks, "it is necessary to state that this number rests only on the evidence afforded by the passage of an exploratory bulbous bougie (that is, a small gum-elastic sound with an olive-shaped extremity two or three sizes larger than the stem) on the person of a *living* patient. . . . The strictures," Sir Henry says, "to use the author's words, '*were for the most part in the spongy portion, about two and one-quarter lines distant from each other*,'"—"a condition," says Sir Henry, "which would perhaps be better described as *a series of irregular contractions* than by any statement of the exact number of the strictures. Rokitsky speaks of *four*, and does not record a higher number as having come under his own personal observation." . . . "My own researches," he further states, "have not led me to recognize numerous independent strictures in one urethra. *Three* or at most *four* distinct contractions I have seen, but such instances are very rare."

With the exception of M. Leroy D'Etiolles, Sir Henry Thompson does not inform us as to the methods of exploration in use by the various authorities he quotes—which, it seems to me, must greatly affect the value of their observations; and, in regard to the method of M. Leroy D'Etiolles, he casts an imputation of inaccuracy upon it by stating that the evidence of the existence of *eleven strictures* in a single urethra, which he claims to have demonstrated, rests *only* upon the evidence afforded by the bulbous sound; and, as if this were not sufficient to discredit the possibility of eleven strictures coincidentally existing in the same urethra, he says, *even if they were defined by the bulbous sound, that they were not strict-*

¹ "Strictures of the Urethra," London, 1869, p. 68.

ures at all, in his opinion, but simply "a series of irregular contractions" of the urethral calibre. John Hunter's statement that he met with *six* is accepted—even Colot's, who claimed to have seen *eight*; but M. Leroy D'Etiolles, who claims *eleven*, is *not* accepted as having recognized *strictures*, but has been deceived by *irregular urethral contractions*.

Why, it may be pertinently asked, with his acknowledged skill and great experience, has Sir Henry Thompson only been able to find *four* strictures in a single urethra, and is evidently slow to accept the occurrence of a greater number in the practice of other surgeons? A satisfactory explanation may be found on page 147 of Sir Henry's work on Strictures of the Urethra, where he gives directions for the exploration of the urethra with the view of ascertaining the presence or the absence of stricture. "In order to effect this object," he says, "a flexible bougie of medium size, that is, from No. 7 to 9 of the English scale (16 to 18 French), is to be used, while as to form, it should be *rather slightly curved, and blunt, not conical at the point.*" . . . "Whatever the patient may say," he further remarks, "this rule is *always* to be adhered to. If a small instrument is employed, it might pass through the stricture without giving any sign of its existence, and so fail to detect it; but, *if a No. 8 bougie (16 French) passes easily into the bladder, we may be satisfied that no stricture or at most a very slight contraction only exists.*"

"This bougie," he goes on to remark, "may be graduated in inches, for the purpose of noting at what distance from the external meatus obstruction is found." Accepting this to be the best method of ascertaining the locality and calibre of the urethral strictures (which I am very far from doing), I am only surprised that even Sir Henry was able to demonstrate the existence of *four* distinct strictures in a single urethra; and, if the same method was pursued by Hunter, Colot, Ducamp, and others, I am sure the number they claim was found in *post-mortem* examination; for I do not hesitate to say that, with a straight or curved bougie, with simply a blunt end, such as advised by Sir Henry, no living surgeon could demonstrate the existence of more than three or four strictures in any one urethra; and I will say, furthermore,

that such a method is *unreliable and imperfect for the diagnosis of even a single stricture*. Sir Benjamin Bell, who invented the ball-probe, was aware of this fact, and M. Leroy D'Etiolles, who modified this invaluable instrument—resulting in the flexible, olive-pointed bulbous bougie—was, through its use, enabled on the living subject to demonstrate the presence of *eleven* distinct strictures in the same urethra. Sir Henry Thompson distinctly states that, *if a No. 8 E. bougie (21 French) passes easily into the bladder, we may be satisfied that no stricture, or at most a very slight contraction, exists*. This teaching it seems to me of the *utmost importance to combat as erroneous, and leading to disastrous errors in the diagnosis and treatment of urethral stricture*. I am the more strongly impelled to take this position from the perusal of a recent *brochure* on strictures of the urethra by Dr. T. B. Curtis, and to whom, for this paper, the Civiale prize of two thousand francs was awarded during the past year. Dr. Curtis, the honored pupil of M. Guyon, of Hospital Necker, and of M. Voillemier, may be safely accepted as mirroring truthfully the views of the French school of urethral surgery at the present time. In this paper he remarks, in regard to the treatment of strictures by dilatation, page 46: “*The treatment shall be considered terminated when you shall have made to enter without effort No. 21. You will thus have restored to the canal the calibre of 7 millimetres (diameter), which represents the normal calibre of the canal of the urethra, which is more than sufficient for the purposes of micturition;*” and with infinite *naïveté* he goes on to say: “*But the mission of the conscientious surgeon is not yet terminated. Although he may have the right to send his patient away as cured, he ought not only to have restored the strictured urethra to a calibre which can suffice for the passage of urine; it is still his duty to put his patient in a position to give himself the consecutive treatment, without which all strictures, by whatever manner treated, will relapse almost infallibly.*”¹ We have here laid down, on the authority of both the English and the French schools, the exact capacity of the human male urethra. Sir Henry Thompson, representing the English urethral interest,

¹ The *Italics* are my own.—F. N. O.

states it to be No. 8 English, which is equivalent to No. 17 of the French scale. No stricture can be permitted in any urethra where the No. 8 English bougie finds easy passage. Dr. Curtis, as the laureate interne of the Hospital Necker, and the successful competitor for the two thousand francs prize of Civiale, in 1873, may well be accepted as representing the present status of urethral science in France; and he states, under the ægis of his distinguished masters, that the *normal calibre of the human male urethra is equal to 7 millimetres in diameter*; that, when a presenting urethra, the previous subject of strictures, more or less numerous or pronounced, shall have been brought by various kinds of dilatation, or divulsion, or incision, or what not, up to a calibre of 7 *millimetres in diameter*, “the conscientious surgeon” has a right to dismiss him as cured. How is it, then, with the poor unfortunates, who cannot conform their urethræ to the procrustean bed of the French and English schools, who find themselves in possession of urethræ, the calibre of which extends to the size of 8, 10, or 12 millimetres in diameter instead of 7; or 20, 22, and 24, of the English scale, instead of 8 or 9? Evidently the difference between the *established normal standard* and the figures just named (if they were within the range of possibility) *might* be occupied by stricture-tissue, which, although it might not be recognized by the No. 8 *blunt-ended bougie*, might nevertheless exist, and would inevitably be detected by a bulbous sound of a calibre corresponding with the size of this apparently extraordinary canal—*extraordinary*, if we are willing to admit the size of the meatus to be a sure indication of urethral calibre, without noting variations caused by congenital and pathological narrowings. A careful examination of several hundred urethræ, within the past twelve years, by means of the *metallic bulbous sound* (which I presented to the profession in 1861), has demonstrated to me that, while I have seen occasional extremes, varying from 20 to 40, the *average calibre of the male urethra is not less than 30* of the French scale, or 18 of the English scale; and that the great majority of strictures which are sources of grave annoyance, and call imperatively for treatment, are *above* what is set down by the French and English schools as worthy of

consideration. Within the past two years I have, in more than one hundred cases, recognized distinct bands of stricture in urethræ, where the English bougie of No. 8 and even the French of No. 21 could be readily passed down through them into the bladder *without giving the least evidence of contraction at any point*; and I have frequently demonstrated this fact not only in my clinique at the College of Physicians and Surgeons, but to a large number of my professional friends in my private practice.

On the 30th of December last I invited Dr. Bumstead, the distinguished author of "Bumstead on Venereal Diseases," to see a patient, fifty years of age, at my office, with a view of examining the calibre of his urethra. The flaccid organ was three inches in length from the meatus to the pubis, and three and a half inches in circumference midway of the organ. In Dr. Bumstead's presence I introduced into and through a *normal* meatus a metallic bulbous sound 32 millimetres in circumference, and then passed it down without the least force to the bulbo-membranous junction. Dr. Bumstead withdrew it, and pronounced the normal calibre of the urethra equal to 32 millimetres in circumference. I then introduced, in the same manner, bulbous sound No. 34; this also was introduced and withdrawn by Dr. Bumstead, with a similar result. The *normal* calibre of this particular organ was thus shown to be 34 millimetres.

On Saturday evening, January 10, 1874, I invited Dr. Gurdon Buck and Prof. Thomas M. Markoe to examine with me the urethra of a patient, twenty-four years of age, who had never been the subject of gradual dilatation, but who had been operated on by me with the (my) dilating urethrotome for three strictures in the straight portion of the canal. The meatus, which was originally contracted to 24 f., had been incised two months previously. The length of the flaccid organ was four inches; the circumference, midway of its length, was four inches. In the presence of these distinguished surgeons I introduced No. 36 f. bulbous sound down to the bulbo-membranous junction. This procedure was repeated by Drs. Markoe and Buck in turn, and the urethra was recognized by them as possessing the *normal calibre of 36 millimetres in circumfer-*

ence. Previously to this trial I had announced the presence of an abnormal contraction at one and a half inch from the meatus, which was detected by the No. 36 bulb on the morning of the same day. Neither Dr. Buck, Dr. Markoe, nor myself, was able to distinguish this alleged contraction. Taking the ground that the introduction of the sound in the morning had made the contraction less salient, I took the bulbous sound next in size, which (through a mistake on the part of Tiemann & Co.) had been made of a circumference of 40 f. instead of 37 f. I pressed it gently against the orifice for a minute, when it entered and passed readily down to one and a half inch, when it was arrested firmly by the contraction before alluded to. Dr. F. D. Sturges and Dr. J. Deforest Woodruff had verified with me the passage of No. 34 f. bulbous sound in the same case a few days previous.

Do you ask of what value is the recognition of urethræ of such enormous calibre as those just cited? Simply, I answer, to demonstrate the *absurdity of fixing, upon the dictum of any man or school, a standard calibre for the human male urethra; to show the necessity of making every urethra a law unto itself*, and to enable the surgeon to judge of the greater or less degree of contraction, in any given urethra, *by the normal calibre of that individual urethra*, as ascertained by interior measurement. In the case presented to you to-night, is it for a moment supposed that his fifteen strictures, ranging from No. 22 f. to one-half of a millimetre in circumference, and extending from his meatus to the prostate portion of the urethra, came without indication or warning until the passage of urine was interfered with?

From his original gonorrhœa, contracted more than twelve years ago, up to the time of his first trouble of micturition, five years ago, he was scarcely free from a chronic urethral discharge, and any surgeon, previous to that time, and subsequent to the inflammatory condition which initiated the trouble, with proper instrumental means, and sufficient intelligence, could have demonstrated the presence of stricture, and by a suitable treatment could have arrested the contractile urethral disease in its inception. His gleet was treated by internal remedies and injections: as well have attempted to remove a ligature

tied *around* his penis, by internal remedies and injections, as to essay the cure of an *internal* cord, the result of inflammatory deposit in the urethral walls. Chronic urethral discharge, commonly called gleet, is the signal which Nature hangs out to notify the intelligent surgeon that an obstruction to the normal working of the muscular apparatus of the urethra has occurred; that plastic material, laid down in the antecedent inflammatory condition, has begun to contract the normal urethral calibre, whether it be 20 or 40 millimetres in circumference, and that nothing short of a complete restoration of the normal calibre of the canal will afford a permanent cure. Sandal-oil may stop it for a time; injections of innumerable variety may, any one of them, temporarily remove it; but a little vinous or venereal excess will reproduce it, and thus the case goes on; getting, as many such cases will affirm, *a new clap for every woman they look at*, until finally an attack of *retention of urine* calls attention to the fact that the patient has strictured urethra.

One of the chief stumbling-blocks in the way of the surgeon in recognizing urethral stricture is the contracted meatus. Authorities concur, as a rule, in asserting that the meatus is the *narrowest portion of the urethral canal*, and yet this is usually accepted as a *test* of its calibre. This opening is subject to great natural variations in organs of about the same general proportions. The well-developed penis in a dozen cases may vary in regard to the size of the congenital meatus, from the calibre of No. 8 or 9 millimetres in circumference to 32 f. or 34 f. It is important to recognize the fact that the meatus bears necessarily *no* proportion to the actual size of the urethra. If symptoms of stricture are present, such as *persistent urethral discharge, etc.*, or if any chronic irritation of the genito-urinary apparatus present, the meatus should be freely incised, and a thorough examination of the canal with the bulbous sounds should be made.

The normal meatus urinarius is well represented by Henle,¹ who has been more minute and definite in his anatomical researches in regard to it than any anatomical authority with

¹ "Handbuch der systematischen Anatomie des Menschen," von Dr. J. Henle, p. 417.

which I am familiar. Thus, as the accompanying plate represents, there is no abrupt enlargement after passing the external border, such as is seen in the usual representations of



Vertical Section of the Anterior Portion of the Penis.

the urethra, and in his description he is entirely at variance with those who claim that a sort of sphincter is found at the meatus. There are no *circular* muscular fibres entering into its composition—simply horizontal muscular fasciculi, or plates, as he terms them, which surround the opening, and are continuous with the muscular structure of the urethra. Vertical sections of the penis from the junction of the glands with the body of the penis show a uniform calibre throughout the fossa

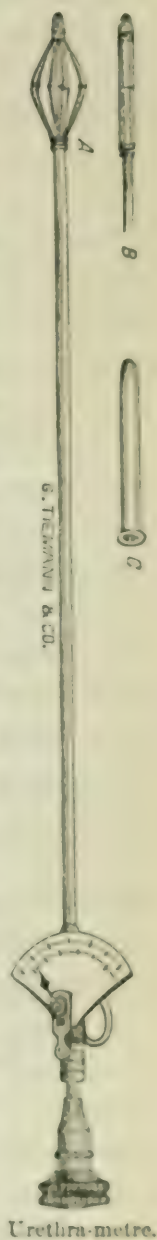
navicularis to its external boundary at the meatus, the opening of which is of corresponding calibre. This may be accepted as the normal condition of these parts, and any variations from such uniformity may be considered aberrations from the normal condition. These are, as a rule, of no practical importance, unless the tissue composing them has been invaded by inflammatory action, in which case the muscular layer being disabled to greater or less extent by the infiltration of plastic material, its office of aiding in the complete emptying the urethra of urine being interfered with, its retention and subsequent decomposition may prove an added source of irritation.

In order to gain a definite knowledge of the calibre of the urethral canal, in cases with or without contraction of the meatus, I have devised an instrument which I term the *urethra-metre*, or dilating bulbous sound, which I now present.

It consists of a small, straight canula, size No. 8 f., terminating in a series of short metallic arms, hinged upon the canula, and upon each other. At the distal extremity where they unite, a fine rod, running through the canula, is inserted. This rod (which is worked by a stationary screw at the handle of the instrument), when retracted, expands the arms into a bulb-like shape, 10 millimetres in circumference when closed,

and capable of expansion up to 40 millimetres. A thin rubber stall (Fig. C), drawn over the end of the closed instrument, protects the urethra from injury, and prevents the access of the urethral secretions to the interior of the instrument. When introduced into the urethra and expanded up to a point which is recognized by the patient as filling it completely—and yet is easily moved back and forth—the index at the handle will then show the normal circumference of the urethra under examination. In withdrawing the instrument, contractions at any point may be exactly measured and any want of correspondence between the calibre of the canal and the external orifice be readily appreciated. Among the advantages to be claimed for this instrument are: 1. Its capacity to measure the size of the urethra and to ascertain the locality and size of any strictures present, *without reference to the size of the meatus*. 2. It enables the surgeon to complete the examination of several presenting strictures by a single introduction of the instrument, and by reduction of its size avoid the irritation which usually attends the withdrawal of the ordinary bougie or bulbous sound.

Returning to the case of aggravated multiple stricture above related, it will have been observed that, notwithstanding the easy passage of a No. 31 solid steel sound through the entire urethra after the operation, there was an *immediate tendency to recontraction*; that within a comparatively short period, the presence of stricture was again definitely recognized. I do not call your attention to this important fact on account of its novelty, for every surgeon of experience has too frequently observed it; and every writer on stricture has recorded it in terms the most emphatic; some even going so far as to state, as does Mr. Wade¹ (quoting the illustrious Dupuytren), that, “whatever care may be taken in the dilatation of strictures, the dila-



¹ Wade on “Stricture of the Urethra,” London, 1860, p. 352.

tation is but temporary in the greatest number of persons, and the contraction has always a tendency to return." Sir Benjamin Brodie says (*op. cit.*): "After a patient has conceived himself to be cured and every symptom of the disease vanished, it is not an uncommon thing for him to suffer a relapse, and in all probability a relapse of far greater danger than the previous attack. . . . From what," he asks, "does this arise? From his not continuing," says Sir Benjamin, "at regular intervals, to pass an instrument (sound) notwithstanding the disease should seem to have disappeared. To pass it once in two or three weeks is enough, but *it must never be thrown aside as useless, during the lifetime of the patient, if he desires to be freed from his troublesome affection.*"

Dr. T. B. Curtis, in his prize Essay previously quoted as representing the views of the leading French surgeons, says, page 46, "*All strictures, by whatever manner treated, and in appearance cured, will relapse almost infallibly.*"

It is, however, an accepted fact that a certain but *very limited* proportion of strictures are permanently cured by each of the various methods—dilatation, division, divulsion. We may again ask, with Sir Benjamin Brodie, from what does *this* arise? The answer is, simply, that, *to prevent the return of stricture after operation, the stricture must first have been thoroughly sundered at some point*—that those strictures which have been *permanently cured* (and in this number I do not include those facetiously termed *cured*, where the patient is obliged to use or have used a sound every two weeks for the balance of his life, but those that never reappear after operation) have been so sundered, either by rupture through dilatation more or less rapid, by divulsion, or division. The reason why the treatment of stricture after the usual methods is imperfect—that there is always a tendency of the stricture to return—arises from the fact that, as in the case cited, the strictures were not *completely sundered* at any point—that they were *distended*, not *completely divided*. All urethral strictures are composed of elastic tissue, and any operative procedure that falls short of *complete* division of the constricting band *can never produce more than temporary results*. As long as No. 8 of the English and No. 21 of the French

scales are accepted as representing the *normal* calibre of the human male urethra, and as long as *curative* treatment ceases when this calibre has been reached, there will never be *radical permanent cure of urethral stricture*. Sooner or later, however, it is certain to be accepted that urethræ vary in size in different individuals just as widely as any other constituent portions of the human body, and that, consequently, stricture of the urethra is a *relative term*; that, while No. 8 bougie English or No. 21 French will determine the presence or absence of stricture in a urethra of corresponding calibre, it fails to recognize stricture in urethræ of larger size and which has been positively demonstrated in certain cases to reach as high as 36 or even 40 millimetres in circumference; and that, *complete* division of stricture, of *whatever calibre*, having been accomplished, *recontraction may be prevented*, and that, thus, strictured urethræ can, by appropriate treatment, be with certainty restored to their normal dimensions, without fear of subsequent recontraction.

This I do not assert unadvisedly or rashly, as the records of more than fifty cases occurring in my own experience will demonstrate. Several of these cases, in which five and six strictures were present two years ago, and then thoroughly divided, have been carefully examined by me within the last month, and can be shown to-day free from the *slightest evidence of recontraction*. This goes far to prove that complete division of stricture, with appropriate after-treatment, will give promise of complete immunity from recontraction. The results of operations with the *dilating* urethrotome, presented by me to the profession at a meeting of the New York Medical Journal Association more than a year ago, have remained permanent; that is to say, *that the strictures operated on, having been thoroughly divided, were afterward completely absorbed*. These results were subsequently published in the NEW YORK MEDICAL JOURNAL of March, 1873. One of the cases (Case III.) there reported, presenting originally five distinct strictures, including one at the meatus—defined by 24 f.—was operated on in January, 1872, and the completeness of the operation was demonstrated by the passage of a 30 f. bulbous sound through the urethra, and was

withdrawn without giving evidence of the slightest obstruction at any point. This was one of four cases (comprising operations on eighteen bands of stricture) critically examined in February, 1873, by a committee of surgeons composed of Dr. Henry B. Sands, Dr. J. W. S. Gouley, Dr. Robert F. Weir, Dr. Thomas T. Sabine, and Dr. Frederick D. Sturgis, of New York, and Dr. Frederic D. Lente, of Cold Spring, N. Y., with the 30 f. bulbous sound at first, and subsequently

ESTIMATED NORMAL CALIBRE OF URETHRA
CIRC. 50 MILLIMETERS

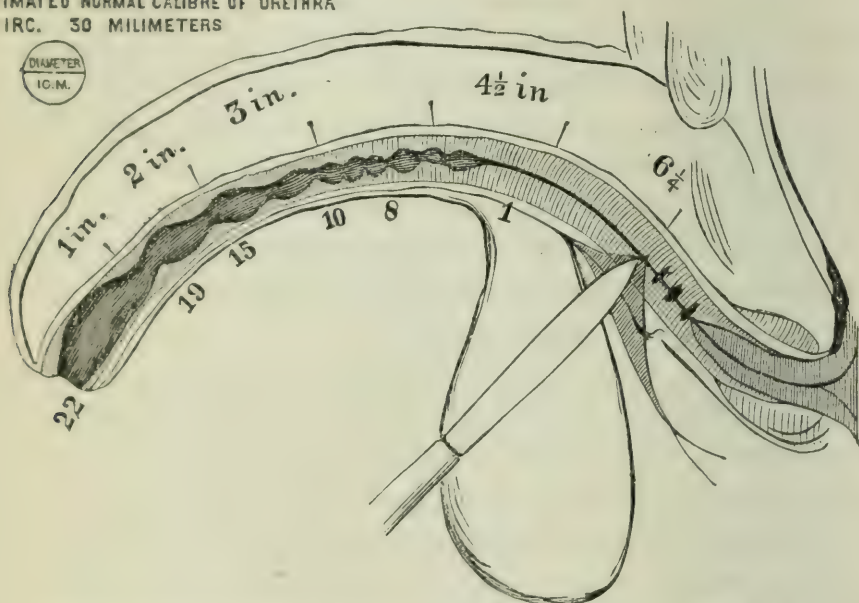


Diagram showing locality of the fourteen strictures in the case of W. C. H.

with 31 f., *without being able to detect any contraction, at any point, in any one of the presenting urethræ.* I am able to afford this Society further proof of the absolute absorption of the above-mentioned strictures, by presenting this case (No. III.) to you for a reëxamination to-night, more than two years subsequent to the operation, in which five distinct strictures were completely divided. In the case of multiple stricture presented, it will be remembered that while 25 f. solid steel sound was easily passed through the urethra without detecting any stricture, No. 18 f. bulbous sound was arrested at the stricture-points. I propose, therefore, in order to put the crucial test to this case, to examine the urethra with No. 30 *bulbous sound.* This, you now observe, passes readily and

easily through the urethra, and is withdrawn without the slightest retention at any point.

I now pass the case over to your committee for the verification of my examination. (Drs. Post, Minor, and Woodruff, having confirmed fully the absence of stricture by introduction and withdrawal of the bulbous sound No. 30, and so reported to the Association, Dr. Otis resumed.) In order to show more fully the complete absorption of the stricture-tissue in this case, I now take a larger bulb than has at any time been used. The urethra, when free from stricture, is very distensible, and hence, by a little pressure, will admit an instrument above the normal calibre. Thus, as you see, this larger bulb, pressed firmly, not violently, against the meatus, now enters and passes without perceptible difficulty through the urethra. The size of this bulb is 34 millimetres in circumference.

In closing this somewhat desultory paper, I would like to be distinctly understood as claiming that stricture, as ordinarily met with, is *absolutely within the reach of curative measures*; that, if completely divided, and this division maintained by suitable means until healing of the parts has occurred, no *recontraction* can ever take place; that dilatation, temporary or permanent, is *never more than a palliative measure*, unless carried to a point sufficient to *completely rupture the stricture*; that the division of stricture is not more hazardous, to say the least, than permanent dilatation—that is, by introduction of dilating instruments, which are required to remain *in situ* for hours or days—or than rapid dilatation, which requires instruments of increasing sizes to be introduced at one sitting; and I may venture to say scarcely more likely to produce trouble than temporary or transient dilatation, as usually practised by surgeons, which is simply to pass a sound or bougie gently through the urethra, and to be immediately withdrawn; the same to be reintroduced, at intervals of two or three days or weeks, for the rest of the natural life of the unfortunate patient. I will here call your attention to a point in the history of Mr. W. C. H., whose numerous strictures have been presented to you this evening, which, in relation to the foregoing *résumé*, it seems to me is very instructive; viz., that his urethral chills, occurring on

two occasions during the progress of the case, each time followed the easy and gentle introduction of a No. 29 f. steel sound; while the division of stricture was not followed, in either instance, by any such untoward result. This gives me an opportunity to state that, in nearly two hundred operations with the dilating urethrotome,¹ performed by me on urethral strictures, chiefly in the straight portion of the urethral canal, within the past two years; beyond four troublesome but not serious cases of after-hæmorrhage, I have met with scarcely an untoward result. Slight chills have occurred in but six cases, and these were all associated with operations upon strictures in the curved portion of the canal.

Among the inferences to be drawn from the foregoing cases and remarks are, first, that stricture may be present before difficulty in urinating occurs; second, that it is always present when *gleet* is present, and that *gleet, as a rule, means stricture*; third, that dilatation of strictures is, at best, but a temporary expedient, valuable in close stricture, where urination is interfered with, and the stricture is too close for the introduction of instruments for completely dividing it; but that dilatation is not only without permanent value, except in such cases, but that *it is pernicious*, inasmuch as, while it is never curative, it takes the place of curative measures; fourth, that nothing short of complete division of strictures can ever result in radical cure.

ART. III.—*Peristaltic Action of the Arteries*. By L. A. STIMSON, M. D.

Des Tissus Érectiles et leur Physiologie. Ch. Legros, Paris, 1866.

Traité d'Électricité Médicale, Recherches Physiologiques et Cliniques. Onimus and Legros, Paris, 1872.

Sur les Nerfs Vaso-Moteurs. Ch. Legros, Thèse d'Agrégation, Paris, 1873.

THE physiology of the vaso-motor nerves foreshadowed by Bichat at the beginning of this century has long been one of

¹ An instrument which first dilates the stricture, and then divides it; first presented by me to this Society early in 1872.

the most interesting problems discussed by physiologists, and, if we may judge by the great diversity of views held by the most prominent men of all countries, one of the least understood. Any new facts and arguments which bear upon this question are sure to be received with interest, and it is in view of this fact that I have wished to reproduce briefly the principal ones found in the publications mentioned at the head of this article in support of the theory of the peristaltic action of the blood-vessels. The author of this theory is M. Charles Legros, one of the most prominent and most respected of the younger generation of French histologists and physiologists, a man well fitted by his habits of careful experimentation, conscientious observation, and cautious deduction, to be the associate, and perhaps successor, of such men as Bernard, Robin, Schiff, Béclard, and Vulpian.

It has been said that the theory is not a new one, and M. Legros himself says that, in developing it, he had no idea he was making a sort of exhumation; but a reference to the views of the earlier authors will show that they contain barely a trace of this theory; and this is not to be wondered at when we remember how incomplete was their knowledge of the anatomy of the vessels and the properties of the tissues. Bichat thought the current of the blood through the capillaries was not produced by the action of the heart, but received its impulse from the contraction of the arterioles; and Sévac considered the small arteries as veritable hearts, endowed with the faculty of uninterrupted, alternate dilatation and contraction. These views were combated very earnestly by Magendie, and for a long time physiologists considered the arterioles as possessing only the faculties of tetanic contraction and passive dilatation or paralysis, the former produced by excitation of the vaso-motor nerves, the latter by fatigue of the muscle or the nerve, or pathologically by destruction of the latter.

But it was soon recognized that there was a great difference between active and passive congestion, and that paralysis of the muscular coat was not sufficient to explain both conditions. From this arose many theories of the mechanism of active congestion, which M. Legros summarizes as follows:

Donders recognizes three states of the vessels: 1. Contraction; 2. Passive dilatation following contraction; 3. Dilatation by antagonism between the nerves of animal and those of organic life.

For Schiff there are: 1. Contraction; 2. Nervo-paralytic hyperæmia; 3. Functional hyperæmia due to an active dilatation.¹

For Loven: 1. Contraction; 2. Dilatation by direct paralysis; 3. Dilatation by reflex paralysis.

For Claude Bernard: 1. Contraction; 2. Dilatation by paralysis; 3. Dilatation by the action of a motor nerve upon another nerve, action analogous to the phenomenon of interference of waves of light or sound.

For Brown-Séquard and Vulpian: 1. Contraction; 2. Paralysis; 3. Dilatation by a sort of attraction of the blood by the tissues.

For Legros: 1. Contraction; 2. Passive dilatation by paralysis of the vaso-motors or their fatigue; 3. Peristaltic autonomous contraction, aiding the current of the blood, and regulating it according to the functions it has to fulfill.

M. Legros develops his theory more fully as follows:²

“This is the way I understand the autonomous peristaltic contractions of the arteries: Following the shock determined by the cardiac contraction, there comes a dilatation of the arteries; in the large arteries it is evidently the elastic coat which, brusquely stretched, returns upon itself and reacts upon the blood; but, in the small arteries, and especially in the arterioles, where the elastic tissue is lacking, it is the walls which, distended, contract under the influence of this excitation, diminish locally the calibre of the vessel, and force the liquid toward the capillaries. The same phenomenon is produced farther on, and determines successive undulations, a peristaltic motion. To the local contraction succeeds the repose of the muscles—short repose, it is true, but so much the more complete as the contraction has been greater, so that, after the narrowing of the vessel, there occurs a dilatation greater than during absolute repose.”

¹ This theory requires the existence of *nerfs dilatateurs*, and consequently rests upon no anatomical fact. It was once held by Bernard.

² “*Sur les Nerfs Vaso-Moteurs*,” p. 83.

This theory was first suggested to the mind of M. Legros while he was studying the physiology of erectile tissues, and after he had found the existing theories insufficient to explain the phenomena, or not borne out by experiment. These theories were that erection was caused—1. By arrest of the venous blood; 2. By paralysis of the vaso-motor nerves; 3. By their violent irritation—and I will mention four typical experiments,¹ one for each theory, as this question is important in the consideration of our subject.

Ligation of several veins in the neck of a turkey caused a congestion of the comb, but a congestion very different from the physiological erection; the comb was purple and cold, not red and warm. A similar experiment upon the penis of a dog was followed by the same result.

He cut the nerves leading to the penis of a dog. After the wound had healed, the animal was placed near a bitch in heat. He had no erection, although he manifested erotic intentions.

Chemical or electrical irritation of the sympathetic nerves caused a pallor of the comb of a turkey, followed, after removal of the irritation, by a slight temporary turgescence; in the penis it caused contraction of the muscle of the envelope (*péri-pénien*), and consequent slight rigidity without turgescence.

A moderately tight ligature, sufficient to excite but not to paralyze, placed about the nerves leading to the penis, caused on the second or third day an erection which lasted two or three days. Six repetitions of this experiment gave satisfactory results four times—that is, the only experiment which caused erection was that which stimulated the nerves to increased physiological action. The result of this stimulus is to awaken or excite peristaltic action of the vessels, and increase the amount of blood supplied to the parts. To corroborate his opinion that erection was caused not by a hinderance to the departure of the blood, but by increased facilities for its arrival, M. Legros fastened a canula into one of the arteries of the penis, and, leaving the veins open, forced water

¹ "Des Tissus Érectiles," pp. 16, 22-24.

through, using a pressure less than that of the blood in the carotids. Complete erection was promptly produced.

Peristaltic action is found in other tubes surrounded by unstriated muscle, it would then be logical to admit it *a priori* for the blood-vessels which are similarly constituted.

Rhythmical contractions have been seen by Schiff and others. Riegel (1871) saw them in the web of frogs; Loven in the leg, and Callenfels in the ear of a rabbit. These contractions were not isochronous with the beats of the heart; Schiff found them in the ear of a rabbit from two to eight per minute. They have been seen in the ureters and biliary ducts, and in the lymphatics. In the lymphatics of a guinea-pig Heller (1871) counted ten pulsations per minute, with forty respiratory movements, and one hundred and twenty beats of the heart. Philippeaux confirms this, and Robin quotes Chauveau for the peristaltic action of the lacteals.

Legros exposed an artery in the perinæum of a dog, and found, during erection, increased pulsations and alternate contractions and relaxations. He found that slight irritation of the superior cervical ganglion of a rabbit by the constant current, a loose ligature, glycerine, or nitrate of silver, caused marked vascularization of the ear of the same side. The induced current causes tetanic contraction of the vessels and anæmia of the parts, a source of error in many observations. Autonomous contraction of the arterioles may be seen by the aid of the microscope in the arteries of the annelides and in the web of frogs. At the commencement of inflammations, and whenever there is an obstacle in the capillaries, these contractions increase. In man, when the central artery of the retina is obstructed, the arterioles which establish collateral circulation are seen by aid of the ophthalmoscope to have marked peristaltic action. The same movements are seen in health when the superior cervical ganglion is acted upon by a weak constant current.

Poiseuille observed that, when an artery, still contractile, was distended by an injection, it reacted with a force superior to that which was employed to inject; this, of course, could not be due to elasticity.

Among the anatomical arguments we may mention the

fact that the mesenteric artery of the goose presents an elongated contractile enlargement, with a great quantity of unstriped muscle in its walls, and an incomplete valve in its interior; also that contractile cells in the walls of the vessels are more numerous as the vessels are farther removed from the heart; they are also found in greater abundance in the arteries of the neck and head, where the current has to overcome the force of gravity; and, finally, the portal vein, exceptional by its position between two sets of capillaries, is richly supplied with muscle—a singular fact, if the only function of this muscle is to diminish the calibre of the vessel and impede the circulation.

I shall terminate now with such proofs as can be found in the peripheral circulation, where the action of the heart is suppressed or diminished. If the passage of the blood through the vessels is aided only by the elasticity of the arteries, and if the muscular coat serves only to diminish their calibre and impede the circulation, injections of the cadaver ought to penetrate more deeply and easily several hours after death than immediately after the stoppage of the heart; for the elasticity, being a physical force, persists, and the opposing contractility of the muscle, being a vital quality, is abolished. But, if the theory of M. Legros is the true one, we should have the opposite result, and injections should penetrate more freely while the vital contractility exists. Now, what are the facts? If the abdomen of a rabbit or dog is opened, the aorta tied, and injection-liquid allowed to run without pressure into the aorta below the ligature, it will pass rapidly through the capillaries and return by the veins, and the microscope demonstrates that it has penetrated the finest capillaries; it is, in fact, one of the best ways to obtain fine injections. It is impossible to obtain similar results upon a cold cadaver, even with the aid of great pressure. If the liquid used is irritating, injection immediately after death is rendered impossible by the tetanic contraction of the vessels which it causes.

Again: it is well known that section of the vaso-motor nerves is followed by paralysis of the muscular fibres of the corresponding vessels and increase of temperature in the parts

supplied by these vessels. But, if now the action of the heart is diminished, what should be the result? If these muscular fibres serve only to check the circulation, the temperature of the parts supplied by the paralyzed vessels should remain superior to that of the healthy parts, for the supply of blood would continue to be greater; but, if it is true that the autonomous contraction of the vessels facilitates the arrival of blood, this action should make good upon the healthy side the diminished impulse received from the heart, and the temperature of this side should equal or surpass that of the other. Experiment shows this to be case. Claude Bernard found that, by weakening the heart by inhalation of ether or chloroform, he produced a reduction of temperature on that side the sympathetic of which had been destroyed. Before the chloroform was given, the temperature of the operated side was 4° Cent. higher than that of the other; under the influence of the chloroform this difference diminished slowly, and ended by being in favor of the operated side.

Such, then, are the facts and arguments in favor of this theory, and they seem to prove that the quality of peristaltic action belongs to the vessels, and that it is exercised with greater or less force as the occasion may require. Of the value of this theory in explanation of many pathological phenomena, particularly those of inflammation, it is unnecessary to speak.

Since the above was written, there has appeared, in the *NEW YORK MEDICAL JOURNAL* for December, an article offering several objections to this theory; and it seems proper that they should be briefly answered here. With the first one, which bears upon an electrical point, and is considered unimportant by its author, I shall not deal, as its consideration would occupy too much space. The second objection is that contractions of the arteries, which are less frequent than the beats of the heart, will impede instead of aiding the circulation. This can be disproved theoretically and by experiment. I found that a stream interrupted 60 times per minute would give 7½ ounces in one minute, and that the same interrupted stream, if aided by synchronous contraction of a portion of the tube (the ball of a Davidson syringe), would give 9.75

ounces per minute; and, if aided by slower contractions (10 per minute), would give from 10 to 10.25 ounces. I also found that a continuous, non-interrupted stream through the syringe would give, when aided by contractions of the ball, from 4 to 30 per cent. more water in the same time than when unaided, the percentage varying with the pressure, the calibre of the canula, and the force of the contractions. Now, a continuous stream may be considered a stream very rapidly interrupted; and, therefore, if this objection were well taken, these contractions of the ball being slower than, and not synchronous with, the original impulses, would have diminished, and not have increased, the amount of water passed.

The objection to arguments drawn from erectile tissues, because they have a special function and anatomy, rests on no better foundation than the others. As the special function of the erectile tissues depends upon an excessive supply of blood, these tissues would seem to be the ones in which the circulation could be studied to the greatest advantage. As to their anatomy, the only parts from which arguments have been drawn are the small arteries which lead to them, and they differ from others only in being more muscular.

The error in the final objection of the article referred to is, that all the elements of the experiment have not been considered by the author. He finds the proportion between the amount of water passed through a tube by a continuous and an intermittent stream to be as 30 to 17 respectively;¹ and, where the canula of the same tube is fixed in an artery of an animal, and the water collected from the corresponding vein, he finds the proportion 80 to 44 in one case, and 152 to 75 in another. He thus finds that an intermittent stream is proportionately less effective in the body than out of it, and concludes that "something in the vessels of the animal alters the ratio," and that peristaltic action of these vessels cannot exist, because this something is not an accelerator of the flow. Now, this something is only the greater difficulty with which the water passes through the capillaries than it does through

¹ For convenience of comparison, I have transposed the figures, and given the different amounts of liquid passed in a given time, instead of the different times required to pass a given quantity.

the canula, for I find, on comparing the streams passed by different canulæ, that this inferiority of the intermittent stream is more marked as the canula is smaller. The amounts are as follows: With the large canula, $\frac{\text{continuous}}{\text{intermittent}} \frac{41}{30}$ ounces; with the medium canula, $\frac{24}{15.70}$ ounces; with the small one, $\frac{8}{4.75}$ ounces—while the proportion is 41:30::24:17.56 instead of 15.70, and 41:30::8:5.83 instead of 4.75, and 24:15.70::8:5.23 instead of 4.75. It is evident that this inferiority is due to mechanical causes, and that no physiological argument can be drawn from it.

ART. IV.—*On a Novel Disease of the Penis, with Cases and Remarks.*¹ By W. H. VAN BUREN, M. D., and E. L. KEYES, M. D.

CHRONIC circumscribed inflammation of the erectile tissue of the corpora cavernosa is an excessively rare malady, and does not yet appear to have attracted much attention from authors, or to have found its way into text-books.² The five appended cases embrace all the experience upon the subject which can be offered.

The disease comes on insidiously, without apparent cause, although it is liable to be ascribed to local injury. The patient first discovers that something is wrong by noticing a slight pain in the penis, at a certain point, when the organ is erect. On examination, he detects a hard, flattened mass, with distinct, sharply-defined margins occupying the substance of one or both corpora cavernosa near the surface, and feeling like cartilage—elastic and springy; not with a bony feel like a

¹ This paper, which was read at a recent meeting of the New York Dermatological Society, is reprinted from advance-sheets of the "Treatise on Diseases of the Genito-urinary Organs, with Syphilis," by Profs. Van Buren and Keyes, shortly to be published by D. Appleton & Co.

² Acton—"Reproductive Organs"—mentions vaguely two cases of imperfect erection as "strange anomalies." These, as well as three out of four cases reported by H. J. Johnson (*Lancet*, November, 1851, p. 481), as "chronic inflammation of the corpora cavernosa," were probably similar to those about to be described; but the details given are not full enough, in any of them, to justify a positive conclusion.

calcareous plate. The penis bends, during erection, at the affected point, and along the edge of the hardness a little pain is experienced. The indurated mass, which is of varying size and usually irregularly oval in shape, may remain stationary for an indefinite period (Case III.), gradually decreasing at last without moving, or progress slowly backward (Case I.) or forward (Case II.), retaining its size and shape, and disappearing anteriorly at the same rate as it advances toward the root of the penis, or *vice versa*. A slight tenderness is felt along the line of advancing induration, and at all times a little extra uneasiness is produced by pressing the induration between the fingers, as well as felt during erection. The disease occurs after middle life. Two of the patients had suffered very mildly from syphilis; the other three presented no symptom of the disease, past or present, on the most thorough examination. Neither gonorrhœa nor stricture has any thing to do with its causation. Specific treatment has no effect upon the induration. The skin of the penis is in no way involved. Although no *post mortem*, so far as known, has disclosed the exact seat and nature of the disease, yet it is undoubtedly, in essence, a chronic inflammation of a peculiar kind, affecting the erectile tissue at a certain point, and so thickening and stiffening the naturally thin walls of the areolæ (probably filling up the interstices with fibrinous exudations) that they cannot be distended with blood during erection of the rest of the organ.¹

Prognosis.—The prognosis is good. The induration does not seem to tend to spread inordinately, nor does the deposit undergo any degeneration or disorganization. Although none of the five cases have entirely recovered, still they have not been injured by their disease so far as heard from.

¹ This description answers in the main to an analogous circumscribed induration, which may occur in the course of tertiary syphilis—in short, gummy tumor of the corpus cavernosum. It corresponds exactly with the foregoing description, except that a gummy tumor tends to remain stationary, to resolve, to break down, or to advance in all directions, but not to advance on one side and get well on the other. Furthermore, gummy tumor is dissipated by treatment. Ricord has given a good description of these gummata of the corpus cavernosum. Zeissl believes that they almost always occur in the posterior third of the organ.

Treatment.—Blisters and external irritants seem to increase pain, without promoting absorption. Iodide of potassium and mercury internally are ineffective. Iodine might be tried, and the passage of a stream of electricity (constant) through the mass. Time will, perhaps, effect more for the patient than can be promised him by treatment.

CASE I.—In December, 1864, a tall, wiry, healthy man, from the West, came to New York to seek treatment. He was married, had four children, and was fifty-four years old. An induration, measuring three-quarters by one-half inch, oval in shape, could be felt one inch behind the corona glandis in the left side of the body of the penis. No pain was complained of, except slight uneasiness on firm pressure. There was no extra heat locally. The induration had been first observed by the patient three months before. He could assign no cause for its appearance. Since that time it had been advancing steadily backward, getting well in front as it increased posteriorly. The penis curved toward the affected side almost to a right angle during erection. The patient stated that he “once bruised his penis in getting over a fence,” and that he had “some disease” of venereal character when a young man, the nature of which could not be positively made out by examination.

Blistering-collodion was ordered, and to repeat. Iodide of potassium internally, and the patient returned home.

In 1868 (four years afterward) he again appeared, to state that the blistering-collodion had caused pain, and increased swelling. The other side (right) became affected. He ceased all treatment for a year, and then improvement commenced. The induration traveled backward, the advancing margin being a little harder and more prominent than the rest of the lump. Slight pain was felt at this margin, but nowhere else.

All the induration had disappeared from the penis in the points first affected, and had localized itself in a band a quarter of an inch wide at the root of the organ. Erections had been so imperfect that sexual intercourse had been nearly impossible for a year, but now the narrow band at the root only caused the penis to tilt up sharply. The member became fully erect, and intercourse was unimpeded. To improved general health and “the use of the organ” he ascribed his

cure. In 1871 (seven years from the commencement of the affection), in response to a letter, exactly the same condition of induration as that which existed in 1868 was reported, with possibly slight improvement. The patient added, further, that he had an older (seventy-seven years) brother living, who was affected precisely as he himself was, though to a less degree, and had been so for a number of years.

CASE II.—In 1871, a gentleman of sixty-three, in robust health, which he had always enjoyed, called to state the following facts: About three months previously, during intercourse, he felt a slight twinge at the root of the penis on its upper surface, which he ascribed to the increased fatness of his wife. Shortly after this, he noticed a slight tenderness in the same locality, accompanied by a ring or line of hardness. This lump had grown but slightly since first discovered, and had not altered in situation. There was upward curving of the penis on erection.

Examination revealed a perfectly circumscribed induration, with a cartilaginous feel, lying across the penis at its root (one-half by one-quarter inch), occupying both corpora cavernosa superficially. There was only very slight sensitiveness on pressure. There was no opportunity for even a suspicion of syphilis in the history or in the examination of this patient.

The treatment suggested was, to pass the constant current several times daily from as many elements as could be endured without actual pain, through wet electrodes placed on either side of the induration. In this case, injury would seem to have acted as a cause.

The induration advanced forward along the dorsum penis, a thickened, slightly-sensitive, rough ridge, occupying the advancing border. Posteriorly, the mass diminished in volume. All the uncomfortable sensations became aggravated at night and after standing.

CASE III.—In 1871, a fat, healthy gentleman of forty-six, with three children, also all healthy, was sent for advice about an induration, which had come on insidiously in the substance of the right corpus cavernosum, just behind the corona glandis. It had been discovered shortly before by accident. No known injury had preceded it. During erection there was chordee toward the right side, with a little pain. The indu

ration lay along the right lateral half of the penis, and measured one by one-half inch. In all its features it resembled the indurations detailed in the two preceding cases, except that it had not yet been observed to move, and had no raised sensitive border.

This patient had had undoubted syphilis of mild and irregular type. He improved decidedly without treatment, and when last heard from was but little incommoded.

CASE IV.—In 1871, a gentleman of sixty came to complain of a lump on the dorsum penis, the nature of which he feared was cancerous. He had discovered it by accident seven months previously. It had enlarged considerably since first detected. About four months after finding the lump he noticed defective erection, with slight pain at the implicated spot.

Examination reveals a distinct, circumscribed plate of hardness, having a cartilaginous feel, oval in shape, lying along the root of the dorsum penis. A slightly-raised ridge in front is a little painful on pressure and during erection. Its posterior border loses itself under the symphysis. The anterior edge ends abruptly. The patch extends across both corpora cavernosa, and is evidently situated beneath the sheaths. It measures one and a quarter inch antero-posteriorly, three-quarters of an inch laterally.

Four months afterward the patient returned to say that erections were still more interfered with, rendering intercourse impossible. The lump was extending somewhat anteriorly and laterally.

This case presented no evidence or suspicion of any venereal taint.

CASE V.—In 1872, a perfectly healthy merchant from the West, aged forty-eight, and married seventeen years, presented himself with a hard, semi-elastic patch of induration across the root of the dorsum penis, about one and a half inch each way, the whole giving the idea of two thin plates joined in the middle line of the dorsum, with some mobility at the line of junction. The edges were slightly thickened and sensitive. The induration had advanced forward one inch in six months. Sexual intercourse was not prevented, but some management was necessary in its performance. No possible cause could be assigned.

Clinical Records from Private and Hospital Practice.

I.—*Representative Cases of Nervous Disease.* By GEORGE M. BEARD, M. D.

UNDER this head I will detail a few cases of diseases of the nervous system that are in some one, or in several features, representative in their character. They will serve to represent some of the leading and distinctive symptoms that are found in the diseases spoken of, as well as certain features in their progress and treatment. In all the cases, it will be observed, electricity was used either alone or in combination with other remedies, and some of the cases, it will be seen, illustrate the value of a combination of electrical treatment with internal medication.

Progressive Muscular Atrophy of the Right Hand, Three Years' Standing; Pain in Back; Numbness, and Coldness, and Neuralgia of the Arm; Disease of the Skin; apparent Arrest of the Disease under Galvanization of the Spine and Peripheral Faradization.

Mr. N., a gentleman of middle life, was brought to me by S. J. Holley, November 14, 1870. The patient, who had a strong constitution, for three years had been suffering from atrophy of the muscles of the ball of the thumb of the right hand. The disease had been gradual in its onset, and very gradual in its advance, and by various treatment—medicines and faradization of the muscles—had been more or less modified. The atrophy was preceded by pain in the back in the region of the third dorsal vertebra. This spot we found to be tender on pressure, and also tender under the electric current. A galvanic current applied to the tender spot caused at once *a sensation in the affected hand*. There were in the hand persistent coldness and great numbness, with anæsthesia, and also impairment of the sense of pressure as determined by examination with the plesimeter, and there was enfeeblement of the sexual power. The coldness and numbness were first *felt six years before* in the track of the ulnar nerve; the pain in the back appeared five years before, and

two years after that the muscles of the hand began to atrophy. At one time there had been evidences of an acute, or rather subacute, congestion of the cord, with the symptoms of numbness of half the body on the right side; anæsthesia of the rectum, so that the fæces were passed unconsciously, and severe neuralgia of the arm—these symptoms lasted one month. The first (and not very strong) application of the galvanic current caused insomnia that night; pain in abdomen, and mental depression, and anæsthesia of the rectum; one day following treatment he felt a sensation in his back, as though some one had suddenly and severely struck him from behind; gradually he became accustomed to the applications, which were made milder and shorter, and began to get better. There were less insomnia and better appetite, less pain and more warmth in the hand and arm. During the treatment, which lasted several weeks—about twenty applications—a *pruriginous eruption appeared on the back and shoulders, with great itching, with which came great relief of the pain in the spine*. The itching of the prurigo was itself relieved by the galvanic current. The disease was, to all seeming, arrested, although the atrophied muscles did not return to their normal condition. Eighteen months after the close of the treatment we met the patient. He was in excellent health; although the hand was still considerably shrunken, the sexual power had returned, and he had but recently married, having previously lived a bachelor, and he was in most excellent spirits. The features of most interest in the above case are:

1. It seemed to show the central origin of progressive muscular atrophy—long before the muscles of the hand began to atrophy there was evidence of spinal congestion at or near that part of the cord whence issue the nerves to supply the arm. For several years these symptoms had been existing before the atrophy was observed.

2. The fact that, when taken early, progressive muscular atrophy, grave as the disease is, may be arrested by galvanization of the nerve-centres.

3. The apparent relation of the pruriginous eruption and the morbid state of the cord. When the eruption appeared with severe itching, the patient at once improved.

The following case gives ground for the hope that writer's cramp, if treated early, might more frequently be cured :

Incipient Writer's Cramp in an Editor; Profound Local Anæsthesia; Rapid Relief under Localized Faradization and Galvanization of the Spine and Sympathetic.

Mr. H. C. B., aged sixty years, a prominent editor, was referred to me, November 20, 1872, by Dr. C. L. Mitchell.

The only symptom of which the patient complained was a numbness of the last two phalanges of the right index-finger. The electro-sensibility was so much diminished that a strong faradic current, which on the third phalanx and all the other fingers of the hand was intolerable, was but little felt on the last phalanx, and caused, indeed, rather an agreeable sensation. The æsthesiometer also indicated great anæsthesia. The muscles all responded well to the will and to electricity. The symptoms had existed about two weeks, and had come on gradually. There was no evidence of cerebral difficulty or of spinal sclerosis; in all other features, except the numbness, and a slight feeling of weakness, or rather of nervousness in the arm, the patient was well. At that stage there was no tingling or pricking sensation, no neuralgia, and no spasms.

I made the diagnosis of incipient writer's cramp, partially by exclusion, and partially by the positive symptoms of numbness and weakness in the parts concerned in writing.

Faradization with sponges and the metallic brush gave immediate relief; the first sitting did much toward restoring the sensation. In nine days, five applications, only the last phalanx of the index-finger remained anæsthetic. This part was obstinate throughout, especially on the very tip of the finger.

The patient now felt that he was well, and closed his visits, still working as usual with his pen as hard as ever, almost all day long.

December 7th he reported a return of the symptoms of numbness, complicated with pricking and tingling sensation, neuralgia of the arm, and great debility. Long writing caused great uneasiness.

Absolute rest from writing was now demanded, and the patient obeyed, still using his brain, but employing a secretary. Again he began to improve under peripheral faradiza-

tion and galvanization, and galvanization of the upper part of the spine and cervical sympathetic.

January 1, 1873, he was very much better—indeed, nearly well. That day he slipped, and fell down the steps of his house, and struck on the hand and shoulder of the affected arm. The shock lamed him greatly, and caused for a long time stiffness and much pain of the shoulder.

The electrical treatment was renewed, January 14th, and continued every other day during the month, with satisfactory results. The enforced rest—for the patient was confined to the house,—coöperated with the electrical treatment.

Some of the most delightful results in electro-therapeutics are obtained in the treatment of certain stages of impotence, of which the following is a favorable illustration.

Impotence of the First Stage, of One Year's Standing; General Health Good; Entire and Permanent Cure under Six Weeks of Localized Faradization.

Mr. —, a gentleman forty-six years of age, consulted me September 28, 1872, for impotence of about one year's standing. He was living with his second wife, who had recently given birth to a child. His impotence was not absolute, but was annoying and to him alarming, and sorely he had been depressed by it. His occupation was confining, but his general condition was superb. Both desire and power were deficient, though not destroyed. The emission came too soon. I began treatment by local faradization, by various external applications. He now began to improve, and by November 2d, after twenty applications, he regarded himself as half recovered.

The galvanic current was now tried, but he declared that it made him worse.

The current of the faradic machine of the Galvano-Faradic Manufacturing Company was also tried, and he fancied that it was more efficacious than the current from Kidder's machine. A few more applications completed the cure, which was permanent.

The treatment of facial paralysis of a peripheral origin by electricity is, as all electrologists know, most satisfactory; and in this disease the superiority of the galvanic over the faradic current is most brilliantly shown.

*Facial Paralysis, induced by Exposure to Wind and Cold.
Recovery under Local Galvanization in a Few Weeks.*

Miss B. —, a young lady about twenty-four years of age, was referred to me, June 25, 1872, by Dr. Corey, with facial paralysis of the right side, that came on suddenly three weeks before, when she was in the country. The exciting cause was clearly exposure to a cold wind while riding in the vicinity of Lake George.

The mouth was badly drawn, and on smiling or laughing the distortion was very great.

The constitution of the patient was exceptionally good. *Farado*-contractility was lost: *galvano*-contractility remained, even under very mild currents. I treated her by the galvanic current exclusively, with my current reverser, which is particularly convenient for cases of this kind.

July 16th.—After twelve applications the patient could move the side of the mouth a little and could close the eye. It was observed during all the treatment, that, immediately after a sitting—indeed, in the very midst of the sitting—the volitional power increased. A considerable portion of this temporary improvement wore away in the course of an hour or more, leaving only a slight margin that became permanent improvement. It was by a succession of these slight margins that the cure was effected by about thirty applications. At first the sittings were held every day or every other day. The patient returned to the country in August, about three-quarters well. In the autumn the recovery became complete.

The following case might be by some regarded as hysteria of the larynx:

Nervous Aphonia of One Year's Standing; no Visible Lesion, but Slight Tuberculous Deposit on Lung; Great Pain from Talking and Terrible Hyperæsthesia; No Relief under Central and Local Galvanization.

Miss B.—, a young lady from Chicago, was referred to me by Dr. Johnson, of that city, December 16, 1871.

The patient was of a delicate, thoroughly American type, but no more nervous than thousands of our countrywomen.

For one year she had suffered from absolute aphonia. The laryngoscopic examination of Dr. Johnson, her physi-

cian in Chicago, and of others, indicated no local lesion that could well account for her symptoms, although a slight tuberculous deposit of a passive and stationary character was detected, by Dr. Clark, in one lung. All the accompanying symptoms pointed to a nervous origin of her disease. The hyperæsthesia was very remarkable. The patient said the pain from whispering was so great that, "when I try to whisper I suffer terribly, become dizzy, and have pain in my ear." "I often feel," she continued, "as if every word I whispered grated on the vocal cords, and to laugh would *make the cords ache*." Almost continually there was pain in the throat, and on this account her nights were wakeful.

The evidence was pretty clear that the nerves supplying the larynx were in a condition of great hyperæsthesia, producing a condition analogous to vaginismus.

In Chicago Dr. Johnson had used electrical treatment, with a view to excite the action of the cord, without benefit. Stable galvanization was used, mainly with the view of calming the irritability and reducing the hyperæsthesia, but without success. In about a month the patient went South for the winter, and I have not seen her since that time.

The injurious effect on the nervous system of working on sewing-machines was shown in two cases that were under my care at the same time, one of which is the following :

Cerebral Congestion in a Young Girl ; Attacks brought on when working on a Sewing-Machine ; Great Temporary Relief under Central Galvanization, Galvanization of the Sympathetic, and Bromide of Potassium ; Relapse under the Continuation of the Exciting Cause.

E. A——, a girl twenty-four years of age, came to me representing that, for four months, she had suffered from attacks of fullness of the head, flushing of the face, with burning feeling that came on, sometimes every day, especially in the afternoon and evening, when she had been hard at work on the sewing-machine. She was employed in a shop where she was expected to work all day on the machine. The constitution of the patient was excellent, and there were no evidences of uterine disorder.

I used central galvanization, galvanization of the head and sympathetic, and prescribed bromide of potassium internally, with immediate and decided relief, but the symptoms recurred when she returned to hard work on the machine.

Cerebral Congestion and Exhaustion induced by Over-Toil and Worry, following Cure of Catarrh and Nasal Polypi; Terrible Insomnia; Temporary Numbness; Recovery under Galvanization of Brain and Cervical Sympathetic, and Internal Use of Cod-Liver-Oil Emulsion.

Mr. D——, a gentleman of middle life, a political editorial writer on one of our prominent Western newspapers, consulted me December 20, 1872, for persistent insomnia of a very aggravated character, that for one year had forced him to try all methods of treatment, including hydropathy, homœopathy, severe exercise, etc., with but little profit. The condition had come upon him as a result of over-toil in his profession, combined with mental annoyances of a most serious character. Formerly the patient had suffered from nasal catarrh (chronic rhinitis) and nasal polypi: *as the cerebral disorder came on, the catarrhal symptoms disappeared.*

The insomnia had been most obstinate: for weeks and months it had been necessary to use chloral, else there was absolutely no sleep; and recently the chloral had lost somewhat of its power.

I gave him a few applications of electricity, using the ordinary methods of galvanizing the brain and cervical sympathetic, and gave the cod-liver-oil emulsion. He was obliged to return to his duties; but he carried out the treatment faithfully, and now and then reported to me his progress. The improvement was constant and permanent. He got along with less and less chloral. In the course of a few weeks he wrote me that he was nearly well; but he adds: "The catarrh is coming back: the devil take it!"

One feature worthy of note in the above case was, the relation that appeared to exist between the constant counter-irritation produced by the nasal catarrh and the cerebral trouble. I have observed the same in other cases, but in none so strikingly as in this.

II.—*Case of Double Diaphragmatic Rupture and Hernia.*

By JOHN M. WOODWORTH, M. D., Supervising Surgeon,
United States Marine Hospital Service.

THE following case was reported to the Marine Hospital Bureau by the attending physician, Dr. Thomas T. Minor, Surgeon U. S. M. H. S., who accompanied his report with a preparation of the diaphragm, portions of the transverse colon, small intestines, and omentum, together with a photograph of the preparation from which the heliotype herewith presented was made:

On the morning of June 28th, was called to see James Tes-
tor, seaman on board United States revenue-cutter Reliance.
Found him suffering severe pain, of a colicky nature, in the
region of the umbilicus, exacerbating at intervals. The pain
had come on suddenly. His pulse was slightly accelerated.
There was no vomiting.

Administered from my pocket-case two grains sulphate of
quinia, with one-fourth grain sulphate of morphia, and in a
few minutes he was apparently much better.

On the evening of the same day he was brought to the
hospital. His symptoms of colic had entirely disappeared,
and were replaced by those of an acute attack of pleurisy.
Sharp pain, located in the left side, about the eighth rib,
impaired respiration, accompanied with that "catching" of
breath peculiar to every well-marked case of acute pleurisy.
There was but little cough, the pulse was rapid and full, and
his skin covered with perspiration. He was put to bed, and
one-fourth grain sulphate of morphia injected hypodermically.
After getting quiet, he received:

R. Hyd. sub. mur.,	
Jalapa pulv.,	ââ gr. x.
Pulv. ipecac. co.,	gr. v.
M.	

During the night he received, at intervals of three to four
hours, a powder consisting of camphor, opium, and ipecac.,
each one grain.



DOUBLE DIAPHRAGMATIC HERNIA.

- A. Diaphragm, showing inferior surface
- B. Hernia of large intestine and omentum.
- C. Hernia of small intestine and omentum.

The next day, June 29th, he felt better. In the morning he received one-half ounce of Rochelle salts, and at noon one-half ounce castor-oil. In the afternoon he had a copious discharge from the bowels, after which he breathed more easily, but the severe pain continued.

On the 30th, Monday, he seemed to be better. Upon auscultating and percussing the left side of the chest, resonance on percussion was readily obtained over the seat of pain, while almost all other portions of the corresponding cavity gave extreme dullness, and throughout the entire (left) lung the respiratory murmur was absent. During the day the respirations became more regular, but the pain still remained. The powders of camphor, opium, and ipecac., were still continued. Upon visiting him in the evening he was found lying upon his well side, and seemed to be more comfortable in that position than any other.

About one o'clock on Tuesday morning, July 1st, he was suddenly seized with nausea, and vomited slightly for the first time. He got on his feet for a few minutes, then lay down, and was soon after discovered to be dead.

Post-mortem examination sixteen hours after death. The right lung and right pleural cavity were found in a healthy condition, as was also the heart, except that it was displaced considerably to the right. The left lung was completely collapsed; pieces cut from different portions of it would not float in water. The corresponding pleural cavity contained about five pints of sero-sanguineous fluid. There was a *double rupture of the diaphragm to the left of the œsophageal opening, and double hernia of intestine and omentum*. Anteriorly the large intestine and a portion of the greater omentum were projected through the wall of the diaphragm into the left pleural cavity. Strangulation of this hernia had occurred, and perforation of the intestine. Posteriorly, through another entirely distinct rupture of the diaphragm, was a hernia of small intestine and omentum.

The abdominal viscera were examined. The liver was enlarged; the greater omentum was drawn far above its usual position, and there were signs of inflammation, particularly along the large intestine.

The previous history of this case, so far as can be ascertained, is as follows: Before shipping on the *Reliance*, Testor was employed on a merchant-vessel at Seabeck, W. T. Ten days previous to his death, while loading ship, he was engaged in shoving heavy planks up a steep incline, bearing their weight full against the abdomen. The planks were so heavy that sometimes he required assistance, and the gangway being narrow another sailor would help by pushing him from behind, he still receiving the full weight against his bowels. While thus engaged he felt a sudden snap inside, and, feeling sick (faint), had to give up work. In a few days, having, as he supposed, entirely recovered, he reshipped in the revenue-cutter one week before his death.

The practical interest of this case for the medical officer of the service lies rather in the direction of prophylaxis when phrenic hernia is diagnosed, since it is doubtful if any surgical interference could ever be of avail, although operations have been suggested by some writers (Guthrie and others). Exclusive of those among military men—from gunshot, sword, and bayonet wounds—of the ninety-odd cases recorded, the proportion of sailors who have been the subjects of this injury is as four to five of all other occupations, falls from masts and other accidents incident to a sea-faring life readily accounting for this preponderance.

Though detected before death, according to Dr. Bowditch, of Boston,¹ in only two instances—one by Mr. William Law-

¹ "Mr. Lawrence, so far as I can discover, is the only person who ever (before our cases at the hospital) recognized the hernia by these signs, † or, as I may add, by any other, save by the morbid appearances after death. It may have been suspected, but never definitely diagnosed."—*A Treatise on Diaphragmatic Hernia*, by HENRY I. BOWDITCH, M. D., etc., p. 50.

The reference † is to a foot-note: † "London *Lancet*, September 5, 1835." But the case detailed in the *Lancet* of that date (p. 751) cannot be the one Dr. B. refers to; for, after detailing the history of the case, its termination in death, and the *post-mortem* appearances—which revealed "a large portion of the intestines, the whole of the omentum, a great portion of the spleen, and the entire pancreas, so completely occupying the left side of the chest that the lung was compressed to the size of a man's fist," etc.—the report closes as follows: "Mr. L. again alluded to the difficulty of diagnosis in this case, though, he remarked, the fixed pain of the side,

rence, of London, at St. Bartholomew's, and the other by Dr. Bowditch himself, at the Massachusetts General Hospital—there appears to be, aside from want of familiarity owing to the infrequent occurrence of this form of hernia, no reason why the diagnosis may not be made with tolerable accuracy in any case where the attention has been awakened, as by the history of a previous severe injury of the trunk; and the frequent occurrence of such injuries to sailors makes it peculiarly the duty of the marine-hospital surgeon to carefully scrutinize the condition of the thorax and abdomen of every patient coming under his care who has been thus injured at any time, no matter how remote. For, although it is true, as above stated, that only some ninety-three or four cases of diaphragmatic hernia are to be found recorded since 1610, there can be little doubt that its occurrence is much more frequent than this would seem to imply.

It is probable, also, that, so far from rupture of the diaphragm and consequent hernia of the abdominal viscera into the thoracic cavity being speedily or even "generally fatal,"¹ the chief risk arises from its difficulty of detection; and that what is true of all herniæ is substantially true of this form, viz., that a hernia, if properly managed, is not immediately dangerous to the patient; does not materially affect his health, nor diminish his enjoyments; but it is, nevertheless, a source of constant danger, since violent exercise, sudden exertion, imprudence in diet, or exposure to atmospheric vicissitudes, may bring it from a perfectly innocent state into a condition which frequently proves fatal.²

the change of situation of the heart, and the arrested respiration in the left side, might perhaps have led to a conjecture of the nature of the disease."

That Mr. Lawrence certainly did not so conjecture in this case is further shown by the remark in the fifth edition of his classical work on "Ruptures" (p. 628), published in 1838, three years after the above: "Among the numerous recorded instances I believe that there is not one in which the nature of the malady was even conjectured before the patient's death." So that, unless Dr. Bowditch refers to some subsequent case of Mr. Lawrence's which I have been unable to find, the credit of being "the only person who ever recognized" a phrenic hernia before death must be added to the other laurels of the eminent surgeon-physician of Boston.

¹ Devergie, "*Médecine Légale*," vol. ii., p. 2.

² Lawrence "On Rupture," p. 2.

Unfortunately, there is no record as to the condition in which the ruptured tissues were found at the *post mortem*; and, the preparation having been dried and varnished, it was impossible to determine, on its receipt in Washington, whether the edges of the ruptured muscle were cicatrized or not. The "sudden snap inside," felt by Testor, may possibly have been the indication of the occurrence of the rupture; but, if so, the case is unique in the character and amount of the violence producing it. Velpeau cites the only case met with at all comparable to it in this respect.¹ A young man of robust constitution, the patient of a M. Battalia, who furnished the history, died in a few hours with many of the symptoms of strangulated hernia, caused, apparently, by a debauch and violent efforts in coition the night before; on *post mortem*, the stomach, greater omentum, and part of the transverse colon, were found in the thoracic cavity. M. Battalia felt assured that the rupture was the immediate cause of death, notwithstanding that the cicatrix of a sabre-wound, received four years before, was found on the right side of the thorax; that the edges of the orifice in the diaphragm were hard and irregular; and that there were considerable peritoneal adhesions, especially to the liver.

The preparation from which the accompanying photograph was made has been deposited in the Army Medical Museum, medical section, No. 1199; and in the same collection are also to be seen preparations, No. 522, medical section, showing a hernia in which the stomach and a large portion of the greater omentum have passed through the œsophageal opening of the diaphragm into the thoracic cavity, with fatal result; and No. 1789, surgical section, consisting of several ribs, the stomach, a portion of the omentum, and the diaphragm, exhibiting a hernia of the entire stomach, through an old gunshot-wound of the diaphragm, death ensuing from strangulation. A full list of titles of the bibliography of the subject will also be found, in connection with the description of this last, on page 205 of the second part of the "Medical and Surgical History of the War."

¹ Velpeau's "Operative Surgery," Mott; vol. iii., edition 1847, p. 701.

Proceedings of Societies.

NEW YORK SOCIETY OF NEUROLOGY AND ELECTROLOGY.

College of Physicians and Surgeons, February 16, 1874.

MEREDITH CLYMER, M. D., President, in the chair.

DR. L. A. SAYRE presented a case of reflex action of the lower limb, the result of injury to the plantar fascia of the foot. He treated the case by dividing both the plantar fascia and the extensor muscles, and the tendons of all the toes of both feet, and from that instant the patient improved.

DR. JOHN VAN BIBBER exhibited an apparatus, for the treatment of paralysis resulting from lead-poison, consisting of a rubber band around the arm, just above the elbow, another around the hand, being held in its proper place by an extension of the screw between the tendons, and the two connected by a piece of rubber tubing. This acting as an extensor muscle, and the band of the shirt as an annular ligament, enable the patient in a short time to greatly recover the use of his hand.

DR. FRANK KINNICUT exhibited an instrument for the alleviation of facial paralysis, by giving support to the affected muscles, consisting of a silver wire bent so that one end enters the buccal cavity at the angle of the mouth, and the other is fixed above and behind the ear.

DR. BEARD exhibited a specimen of epithelial cancer, for the purpose of stating the method of its removal. The ordinary method of electrolysis is to place the needle directly in the tumor. The method which was employed in this case consisted in placing the needle under the growth, and with the negative pole working up the surface beneath, until finally the tumor fell off. The operation occupied from a half to three-quarters of an hour.

DR. C. C. SEGUIN presented a section of the spinal cord from a patient afflicted with infantile paralysis, showing three specimens of cells.

Under the head of Special Order, AUSTIN FLINT, JR.,

M. D., delivered an address upon "The Mechanism of the Reflex Nervous Action in Normal Respiration." He said :

MR. PRESIDENT, GENTLEMEN OF THE SOCIETY :

I shall have the honor this evening of making some remarks on the mechanism of the reflex nervous action in normal respiration. A great part of the statements that I shall make, and the views advanced upon this point, are derived from personal experimentation. But they are by no means entirely new ; for the experiments upon which my views are based were published in the main in the *American Journal of Medical Sciences* for October, 1861. Still these experiments, which seem to me to be of considerable importance, have been noticed so little in physiological writings, that I venture to assume they may be new to many of those who listen to me this evening. Of course, after Marshall Hall had familiarized physiologists with regard to what he termed reflex action, it was pretty generally understood by physiologists that respiration, or the respiratory movements, were of a purely reflex character, unless they were modified by voluntary acts ; that the ordinary movements of respiration took place without the intervention of the will.

Now, the experiments that I shall detail this evening are based on, or suggested rather by, the experiment made in 1664 by the celebrated Robert Hook, and published in the "Philosophical Transactions" of 1667. The experiment, though it could not be completely understood at the time, is a very instructive one. It consisted in introducing into the trachea of a bull-dog a bellows ; in making an opening into the chest ; in cutting off a portion of the lungs, and forcing air through the lungs. And Robert Hook found that so long as air was forced into the lungs in this way, the animal, though sensible, made no efforts at respiration. (I may anticipate enough to say that, while the air was supplied to the system, the animal felt no want of air, and consequently had no inclination to respire, and did not respire.)

In studying the subject of the reflex nervous action in respiration, we are immediately struck with the relations of the pneumogastric nerve to the respiratory apparatus ; and it

is all the more important to study the relations of this nerve to the process of respiration, as it arises very near that point in the medulla oblongata where the so-called "vital knot," or where the respiratory nervous centre, is supposed to be situated.

The doctor here rapidly sketched the condition of our knowledge respecting the influence of the pneumogastric nerve upon respiration.

As you well know, he continued, this nerve is of immense distribution, and is connected with various functions. The branches that are distributed to the respiratory organs are the superior laryngeal, which is distributed to the mucous membrane of the larynx, and to the mucous membrane covering the top of the larynx, and to the crico-thyroid muscle.

Next in order, we have the inferior laryngeal nerves, which are distributed to the intrinsic muscles of the larynx, except the crico-thyroid. This nerve is composed of entirely motor filaments, and derived from a variety of sources.

The pneumogastric, as you well know, is originally an exclusively sensory nerve. Experiments are somewhat obscure upon this point, on account of the difficulty in irritating its original roots, without stimulation of other parts. Still the careful experiments of Longet show that when the spinal cord of an animal is opened, and the roots of the pneumogastric are isolated and stimulated, no movements follow this irritation, showing that the original filaments are not motor. But the pneumogastric, as it emerges from the cranial cavity, receives numerous filaments, and thus in its course it is a mixed nerve.

If both pneumogastrics were divided, we find that the respiratory movements are very much diminished in frequency; and I have in my mind an experiment, in which it was reduced, immediately on division of the nerve, from 24 to from 4 and 6, in a minute. And this simple experiment is a denial of the proposition that the pneumogastric nerves are the only nerves concerned in the functions of the so-called *besoin de respirer*, or sense of respiration. If they were, respiration should cease after division; but it does not. In this experiment, curiously enough, the animal

did not die; but, a few weeks after, the number of respirations returned to their normal standard. I imagined (which afterward proved to be correct) that the divided ends of the nerves had reunited.

The condition of the lungs, after division of the pneumogastric—that is, in cases where death follows such division—is peculiar, and was for a long time unexplained. In animals that live for three or four, or more, days after the operation, and subsequently die, the lungs present, over pretty nearly their entire surface, a carnified condition; they are solid; will sink in water, and are red; but still do not present evidences of inflammation. It was thought at first that this was due to inflammation; but physiologists failed to find the evidences of any such action. Bernard, I think, has given the correct explanation. He found that, when the respiratory movements are so greatly reduced in frequency, they are immensely increased in intensity; that the inspirations are extraordinarily prolonged and profound; that the chest in the inspiratory act is extraordinarily distended; and he advanced the idea that this extraordinary distention induced capillary hæmorrhage in certain parts of the lungs, and finally it embraced nearly the whole of the pulmonary structure; that the blood is not carried away, and that when the animal dies the lungs present a carnified appearance.

Now, I think the proposition that I am about to enunciate has been denied by some few physiologists; still the great mass of physiologists believe that the medulla oblongata is the respiratory nervous centre; and the mechanism of this reflex phenomenon of respiration may be briefly stated as follows:

Any reflex act or phenomenon requires three conditions:

1. The integrity of nervous filaments conveying an impression to the nervous centre.
2. The existence and integrity of the nervous centre.
3. And, finally, the integrity of the motor nerve which conveys a stimulant that is generated by the centre nerves to the proper organ.

If we assume that respiration is a reflex phenomenon, we must assume that there are nerves which convey some impressions to the medulla oblongata. We find that the medulla

oblongata is the respiratory nervous centre; for, when the centre is broken up, all movements of respiration instantly and permanently cease. Now, this sense of want of air has been called by the French *besoin de respirer*; and, under ordinary circumstances, this sense of the want of air is not felt by us except at the medulla oblongata, and this at proper intervals, so that our respiratory movements are kept up without our knowledge. And it is only when there is a greater deficiency of air than usual, or when there is an obstruction to respiration, that this sense becomes exaggerated, resulting in what we term suffocation, more or less pronounced. This was proved by the experiment of Robert Hook, and this experiment suggested my own experiments in 1860-'61, which have been continued more or less to the present time I put the animal completely under the influence of ether, and introduced the nozzle of a large bellows into the trachea, opened the chest, and turned back the anterior walls of the thorax by breaking the ribs, so that I exposed the lungs and diaphragm, and then very carefully maintained respiration with the bellows. I found that, while the ordinary respiration was complete and efficient, the animal was perfectly quiet, and made no effort to respire. In performing this experiment I interrupted the ordinary respiration for a moment. Very soon I could see the diaphragm begin to vibrate, expanding and contracting slightly, then more powerfully and systematically, showing that the animal tried to get air, ineffectually, because its chest was open. Again, beginning the ordinary respiration, in a short time the animal again became quiet when respiratory needs were entirely supplied. I then exposed the artery, and introduced into it a tube with a little stop-cock, so that I could turn off and on the blood at will; and, while I kept up the ordinary respirative efforts, drew a little blood from the artery upon white plates, which showed a bright fluid color, characterizing it as arterial blood. My assistant interrupted the respiration, and I allowed the blood to flow in a little stream from the artery; and I found that, when the blood began to be dark in the artery, the animal made efforts to respire.

Now, there are several views which have been advanced to explain the location of *besoin de respirer*:

Marshall Hall thought that it is due to a want of air in the lungs themselves, and is conveyed to the medulla oblongata by its pneumogastrics.

Reid thought that it was due to circulation of venous blood in the medulla oblongata. This is entirely theoretical, and not capable of demonstration.

Bernard thought that this sense was due to a distention of the heart by venous blood when venous blood was arrested.

Vierordt thought that it was due to the circulation of venous blood in the substance of the nerves generally.

Volkman, in 1842, made a very instructive experiment by dividing the pneumogastrics of a cat, when she showed intense distress, and suffocation was manifested, because the recurrent laryngeals being paralyzed, the larynx, being comparatively flaccid, falls over the chink of the glottis, closes it, and this cuts off the passage of the air immediately; so that Volkman, reasoning from this experiment, stated that the sense of the want of air resided in the general system, because he could not locate it in any vital organ.

Now, if you will permit me to continue my account of the experiment which I will detail, I think I can show that it is certain that the sense of the want of air resides in the general system, and that it is due to the want of oxygen by the system.

We have an animal with the heart and lungs exposed, and we find that as long as ordinary respiration is kept up, he makes no efforts at breathing so long as air is supplied in sufficient quantities; and we find that just as soon—and no sooner—as the blood becomes markedly dark; that animal begins to make efforts at respiration, and feels the want of air.

I think the examination shows that this sense of the want of air is due to the circulation in the system of blood more or less venous in character.

Now, what is the cause of this sense of the want of air? What are the conditions of the blood that are different from the ordinary conditions of arterial blood? There are two conditions: 1. Deficiency of oxygen in the blood, that is rendered more or less venous. 2. The presence of carbonic-acid gas in the tissues. It is my opinion that the sense of the want of air

is due to a want of oxygen in the system, and not to the irritating qualities of carbonic-acid gas, and that it is entirely analogous to hunger and thirst. The sense of thirst is an entirely subjective sense, and is due to the want by the tissues of moisture. If you make a fistula in the stomach of an animal, the supply of water will do him no good; whereas, if you cork up the fistula, the whole quantity of water will remain, and will be absorbed, and the thirst will be relieved. The same with hunger. So I believe this sense is due to the want of oxygen in the tissues referred to the thorax, because it is by feeding the thorax with air that we naturally supply this deficiency in the system. Carbonic acid does not originate in the blood. It undoubtedly is an excretion.

In regard to the first respiration of the new child, the professor said that it was due to the arrest of placental circulation. He had frequently taken young animals from the uterus of the mother and laid them on the table. In a short time respiratory movements were made. If, instead of separating the young from the mother, the umbilical cord is pressed, the same phenomena are observed. Obstetricians and gynaecologists have occasionally observed efforts at respiration *in utero*. This is due to interruption of placental circulation by pressure or otherwise. This subject has been abundantly treated in a German work, entitled "Der Scheintod Neugeborener," Jena, 1871, by Dr. B. S. Shultze, in which the facts I have stated are so fully set forth that there can be no doubt.

The general results of the experiments that I have detailed this evening, which I may say I have performed over and over again, are these: That respiration is a reflex phenomenon; that it has a peculiar nervous centre, which is the medulla oblongata; that, when the nervous centre is broken up, no respiratory movement can take place, because there is no centre to receive the impression; that respiratory movements are due to an impression made upon the centripetal nerves; that this impression is due to a want of oxygen in the tissues, and that it is found that the medulla oblongata being the centre of the general sensation nerves, the sympathetic may participate or not; there are no means of ascertaining this fact; that this sense of want of air, being in the medulla,

gives rise under ordinary circumstances to respiratory movements which take place without consciousness to the individual; that respiration being carried on by the medulla oblongata, the brain has no trouble in the matter; that, whenever there is only deficiency in respiration, this sense becomes exaggerated until it constitutes the sense of suffocation, which involves voluntary efforts on the part of the individual to supply the want of air so felt by the general system.

Dr. Dalton followed in a long and interesting argument, and discussed the question whether the sense of want of air was due to a deficiency of oxygen in the system or to an accumulation of carbonic-acid gas.

MEDICAL LIBRARY AND JOURNAL ASSOCIATION OF NEW YORK.

At the meeting of the Society, held February 13th, Dr. A. McL. Hamilton read a paper on "Trembling and Loss of Coördinating Motor Power as a Symptom of Disease." He said that when trembling occurs it will be found that the motor nerves are affected, while in all cases sensation preserves its integrity. By various writers tremor has been divided into two varieties: Trembling which is present when the body is in a state of repose, and that due to an irritation of the nerve-centres. Another form of trembling is manifested exclusively during the performance of voluntary acts, and is dependent upon want of stimulation, and insufficiency of nerve-fluid.

The diseases which are characterized by this symptom may be enumerated: Functional derangement—hyperæmia of cord, alcoholism, metallic poisoning. Organic disease—multiple sclerosis, paralysis agitans, chorea, general paralysis, progressive muscular atrophy.

The different kinds of incoördination are shown in speech; in the movements of the upper limbs; in the movements of the lower limbs; in the loss of location.

Dr. Neftel said trembling could be explained physiologically. Trembling is in one single muscle what convulsions are in many. Pathologically speaking, it is the same thing

as convulsions. There are two conditions necessary to cause trembling: 1. Voluntary muscles should be eliminated from the will; 2. Nerves should undergo degeneration. In marked states we find these conditions fulfilled.

At the meeting held February 20th, a valuable paper was read by Dr. S. B. Ward, entitled "Paracentesis Thoracis; with a New Sign of Effusion into the Pleura." Dr. Ward said:

It is well known that when any considerable amount of fluid is present in the peritoneal cavity, or when an ovarian cyst is filled with fluid, by tapping one side of the cavity, no matter how slightly, a wave is started, which is transmitted in all directions, the shock produced by which can be readily felt at any point of the cavity. So far as I know, it has never been pointed out that the same wave-shock can be transmitted from the top to the bottom of the chest filled with fluid; or, in case the chest is only partly filled, from any point below the level of the fluid to any other point below the same level.

In October, 1873, I was asked by Dr. J. W. Wright, of his city, to see, with him, Kitty Gilday, aged seventeen, who had all the rational and physical signs of pleurisy, with effusion, and whose chest he proposed to tap on account of dyspnœa. The diagnosis seemed to be clear. The intercostal spaces were bulging. I requested the doctor to pass one finger of his left hand into the second or third intercostal space above and in front, and make percussion on it, while I laid a finger in the seventh intercostal space, on the outer aspect of the chest, at the usual point for tapping. The wave was transmitted as perfectly as could be desired, and the doctor immediately removed with the aspirator ninety-five ounces of clear serum, with immediate relief from the dyspnœa. Two months afterward, the patient was again suffering from dyspnœa, but the signs of effusion did not seem to be so clear. On the 26th, I was asked to see her again, and the intercostal spaces were not at all prominent. The wave-sign, which had been in the mean time almost forgotten, was again resorted to, and, if it was to be relied upon, showed the chest to be again entirely filled with fluid. We therefore tapped at the same

point as before, between the seventh and eighth ribs, and drew off ninety-three ounces, and again the dyspnœa was entirely relieved. Since then, the chest has been gradually filling, and on the 28th of January the fluid had reached the level of the second rib.

Dr. J. R. LEAMING said that a number of times, through accident, the entrance of air had occurred into the pleural cavity, with no serious result. He was inclined to think that this danger had been very much over-estimated. He recognized the clearness of the sign of the transmitted wave.

Dr. C. A. LEALE also recognized the sign, and related several cases where disarticulation of both clavicles at their sternal articulation had followed accumulation of pleural fluid.

Dr. HUDSON said that, if he had known the sign before, it would have saved him from error in diagnosis in at least one case.

DRS. C. T. TAYLOR, A. C. POST, and others, followed, referring to various cases and instruments for relieving the pleuræ of effusions.

NEW YORK MEDICO-LEGAL SOCIETY.

J. C. PETERS, Vice-President, in the chair.

At the regular monthly meeting, held February 26th, the following-named gentlemen were elected members :

William H. Secor, Esq., 202 Broadway ; Hon. C. W. Noble, Professor of Jurisprudence, Cleveland, Ohio ; William C. Jordan, M. D., 304 Madison Avenue ; J. Foster Jenkins, M. D., Yonkers, N. Y. ; W. H. Katzenbach, M. D., 35 West Thirty-fifth Street ; H. H. Robinson, M. D., Goshen, N. Y. ; William G. Davies, Esq., Assistant Solicitor Mutual Life Insurance Co., New York ; William H. Helm, M. D., Sing Sing ; Geo. J. Fisher, M. D., President-elect State Medical Society, Sing Sing, N. Y. ; B. A. Segur, M. D., Sanitary Superintendent of Brooklyn, 17 Clinton Street ; Louis Fisher, M. D., 231 West Thirty-eighth Street ; William W. Strew, M. D., 656

Lexington Avenue; Thomas R. Pooley, M. D., 228 West Thirty-fourth Street.

The committee appointed to consider Assembly Bill No. 27, entitled "An Act in Relation to Proceedings for the Safe Keeping and Care of Lunatics," reported favorably, with recommendation of an amendment making the appointment of examiners in lunacy by the County Medical Society instead of the Board of Supervisors.

Horace Barnard, Esq., 98 Broadway, read a valuable paper entitled "Experts as Witnesses." He said: "The opinions of witnesses are not to be received. Facts only are admissible. The 'opinions' of scientific witnesses are no more controlling than of any other class, on subjects within range of the observations" (9 New York, 194). Opinions on matters of law are not admissible. The testimony of a chemist who has analyzed the ingredients of a composition of matter, as to the nature of such composition, is not a matter of opinion, but evidence of a fact demonstrated. Whether a person was drunk or not, witness may testify in direct terms, but cannot state all constituent facts. This does not require science but observation (*People vs. Eastwood*, 14 New York, 562).

Mr. Barnard spoke of a recent case in which the expert usurped the place of witness, advocate, and judge, when it was evident that he examined only one side of the case. If a client were to ask a lawyer for an opinion, would he not naturally ask to see papers on the other side? Otherwise it would be a one-sided opinion, a prejudiced opinion. This objection would remain as long as experts were called upon one side. He should be elevated. Make the expert an instructor, and remove him from temptation. He should be summoned by the court, so that an enlightened judge could charge the jury, instead of being confined with the opposing "opinions" of experts on either side. If the rules of evidence should be strictly enforced, and experts be bound by honor, law and justice would be greatly aided by such combination.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Meeting, February 23, 1874.

ELLSWORTH ELIOT, M. D., President, in the chair.

THE following-named gentlemen were elected members on recommendation of the Comitia Minora : C. P. Kreiger, No. 349 East Eighteenth Street, University of the City of New York, 1872; Edwin J. Messener, M. D., ditto; J. Haven Emerson, M. D., 81 Madison Avenue, College of Physicians and Surgeons, 1864; Charles S. Roberts, M. D., ditto, 1864; Charles T. Rodgers, M. D., University of the City of New York, 1874.

Dr. HERMAN F. GULEKE read a paper on "Scoliosis," or curvature of the spine, being a recapitulation of the anatomy of the spinal regions, as presented by Gray and others; their action in the production of curvature during various periods of life; a recapitulation of views of authors relating to the subject; and the best method of treatment. He also exhibited an instrument for ascertaining the exact size and form of the pelvis, consisting of a series of iron bars arranged in a circle, the ends pointing inward.

Dr. J. H. PACKARD, of Philadelphia, exhibited a splint of his own invention for the treatment of excision of the knee-joint. The object of the splint is to enable the limb to be kept perfectly quiet during the whole period of treatment, and to allow the parts to be dressed without disturbance of the knee. The peculiarity of the splint is that that portion of the splint beneath the knee may be drawn out while the other portions of the splint are kept in their place by means of an iron arch on each side, which preserves the continuity of the splint on either side of the limb. It was highly commended by the surgeons present, and a vote of thanks was presented to the inventor by the Society.

Dr. A. JACOBI made a verbal report on behalf of the delegates to the State Medical Society. He said the main parts of the proceedings have already appeared in the medical

journals, but he was struck with the fact that he saw, year after year, at Albany, the same delegates, almost without exception. He would recommend all physicians to attend, no matter in what capacity.

NEW YORK PATHOLOGICAL SOCIETY.

THE Pathological Society held its regular meeting at the College of Physicians and Surgeons on the evening of February 25th, Dr. Knapp, President, in the chair.

Dr. J. C. PETERS made a few remarks concerning the corpus luteum of menstruation, and in pregnancy, showing that for the first three weeks they were very small; but the corpus luteum of menstruation was very much larger than generally supposed, being nearly three-quarters of an inch long, and half an inch wide.

Dr. FINNELL presented a specimen of the head of the femur excised for disease of the hip-joint. The case was of five years' standing.

Dr. KNAPP presented a specimen of syphiloma of the dura mater, which also involved the pia mater—with microscopic representations.

In executive session, the resolutions of the Academy of Medicine, regarding the rank and pay of the army medical officers, were read, and unanimously adopted.

College of Physicians and Surgeons, March 11, 1874.

DR. KNAPP, President, in the chair.

DR. J. LEWIS SMITH presented two specimens. The first consisted of the larynx and trachea, with the left lung attached. This was from a child four years of age, who was healthy up to the middle of last November, when it was attacked with scarlet fever, which soon became complicated with diphtheria. It soon recovered from the scarlet fever, as well as the diphtheria; but from that time laryngeal obstructions began

to increase. He saw it after it had been sick two weeks, and then made what proved to be the correct diagnosis; namely, retro-pharyngeal abscess.

The *post-mortem* examination was made by cutting in back to the vertebral column, and raising the larynx and trachea. Here was found a quantity of pus, which appeared to be the seat of the abscess, nearly opposite the epiglottis, or a little below the epiglottis. The quantity of pus, without exact measurement, appeared to be from about one and a half to two ounces. The larynx presented a jagged appearance. There was a slight diphtheritic exudation, which presented a pulpy appearance; still there was not a sufficient quantity to account for the apparent obstruction to the respiration. The trachea presented a more normal appearance. There was in this case a double pneumonia, which had been overlooked during life. The respiration of the child was about 40 at one time. When I ascertained the obstruction, the pulse was 140, and the temperature 102.5° . The symptoms then being so plainly referable to the larynx, we did not examine, as we should have done, the condition of the lungs. There was pneumonia of the lower lobes, and of the middle lobe on the right side. The point of chief interest is, of course, the fact that there was an abscess pressing against the larynx.

Dr. SAYRE presented three cases. In the first he exhibited a string of beads, one of which he had taken from the trachea of a child, seven years of age, living in New Jersey. On the 11th of February he removed the bead which had been swallowed four days previously. She had a continuous, anxious cough, and complained of a great deal of pain under the middle of the sternum. Whenever she coughed the bead would pass up and down the trachea, and you could hear it as it struck up against the glottis. She was relieved by tracheotomy, which was performed by making a free incision in the median line and severing the tracheal rings. She coughed out the bead, gave one inspiration, and died. The incision was opened thoroughly, and artificial respiration was established, being kept up thirteen and a half minutes before any voluntary respiratory movements on the part of the patient were observed. Alcohol was injected into the rectum, and the gal-

vanic current into the phrenic nerve. It was nearly half an hour afterward that she finally gave a cough, and a large piece of inspissated mucus appeared in the opening of the larynx which had formed an overcoat to the bead, which was immediately seized and pulled out. I suppose the overcoat fell off from the bead and plugged up the bronchus, which was the cause of the sudden relapse. She immediately rallied, and then had no further trouble.

The point of interest is the fact of respiration being established while the tracheal incision was open; and it is a question whether we might not perform tracheotomy with advantage in cases of drowning and like accidents.

Dr. EDEL presented, without remarks, a specimen of a sarcomatous tumor which he had described at the meeting in January last.

Dr. H. KNAPP presented and described a gummy tumor of the brain, which sprang from the inner surface of the dura mater.

NEW YORK LARYNGOLOGICAL SOCIETY.

February 12, 1874, at 333 West Twenty-second Street.

Dr. ROBERT F. WEIR, President, in the chair.

Dr. BEVERLEY ROBINSON presented a patient with aphonia, due, apparently, to cardiac disease. Left vocal cord paralyzed.

Dr. GEORGE M. LEFFERTS presented for examination a man, aged twenty-seven, upon whom he had operated for closure of a congenital fissure of hard and soft palates at the New York Eye Infirmary. Operation successful. Dr. Lefferts also exhibited a woman, aged twenty-three, whom he had treated for a large unilateral bronchocele affecting right thyroid lobe, which had increased steadily the last six months. He injected five times, at intervals of one week, tincture of iodine into affected gland. Growth has disappeared. Present neck-measurement, nineteen inches.

Discussion on naso-pharyngeal catarrh being in order, Dr.

MORRIS J. ASCH objected to the application of the name of catarrh to what he thought was more than an affection of the mucous membrane alone. Ulcerations, vegetations, and chronic hypertrophy of the mucous membrane of the turbinated bones were very often met with in his experience; he treated ulcers of the naso-pharyngeal tract by applying astringent spray, and used the solid silver caustic with success where the spray failed. Dr. Asch said that the origin of the rhinal discharge was often obscure, and described a case of abscess of the antrum which rendered the pharynx so sensitive that the rhinoscope could not be used. When the abscess healed, the discharge subsided.

Dr. CLINTON WAGNER agreed with Dr. Asch as to frequent occurrence of hypertrophy of mucous membrane over the turbinated bones. For this condition he used daily dilatation by cylindrical sponge-tents adapted to the curve of the canal, and later spray of the salts of zinc and copper, and solution of iodine. Disappearance of the discharge and sensitiveness usually followed this treatment.

Dr. ANDREW H. SMITH used the English urethral bougies for the same purpose, but did not approve of the use of strong solutions in applications to the mucous membrane of an organ of special sense like the nose. He cited the intense pain caused by solutions of copper sulphate. He regarded the characteristic nasal voice, when persistent, as indicating hypertrophy of mucous membrane, and recognized that the thickening of the laminae of the nose prevented perfect articulation of nasal sounds. He used insufflation of iodine-vapor in cases of hypersecretion from the mucous membrane.

Dr. MATTHEW D. MANN agreed with Dr. Smith in condemning the use of strong copper solutions, and had remarked that the pain caused by such treatment was not immediate, but followed after an interval of from a few minutes to half an hour.

Dr. GEORGE M. LEFFERTS found solutions of corrosive sublimate also caused pain. He regarded cases of strumous and syphilitic origin as those which were easiest to cure. Besides hypertrophy of mucous membrane, he often recognized an oedematous condition of the parts, as demonstrated by the

relief afforded by compression, and by lying on one side, thus causing the serum to gravitate. Dr. Lefferts favored the use of nasal douche and salt-water twice daily; afterward he employed mild astringents.

In obstinate cases he cauterized through an ear-speculum the mucous membrane of the turbinated bones—usually the surface of the middle one.

He suggested use of galvano-cautery, in which recommendation Dr. Frank P. Kinnicutt joined him.

Dr. BEVERLEY ROBINSON used the perchloride of iron. He attached importance to the recognition of diathetic peculiarities in patients. He feared that the common nasal douche did not irrigate the whole nasal tract, and thought that the secretion under the ethmoid bone often escaped contact.

Dr. FRANK H. BOSWORTH did not favor the theory of chronic stricture of the canal; to which Dr. Robinson replied that an analogous condition in chronic bronchitis warranted the theory.

Dr. SMITH referred to Dr. Gross's operation of removal of the inner edge of superior turbinated bone.

Dr. ROBERT F. WEIR was in the habit of classifying in three groups this affection as he met with it, when affecting, first, superior meatus; second, the anterior passages; and, third, the pharynx. He treated successfully the pharyngeal variety by application of nitrate of silver, grs. 60 ad $\mathfrak{z}\text{j}$, *guttatim*, through a Eustachian catheter, or on a cotton probe. The disease in the anterior passages he cured with nitric acid and chromic acid, gr. C. ad $\mathfrak{z}\text{j}$. Has also found gargles of chlorate of potass with carbolic acid to be valuable.

Dr. WEIR referred to the use of the galvano-cautery by Dr. Simrock, of New York.

After executive session, the Society adjourned.

Bibliographical and Literary Notes.

ART. I.—*St. George's Hospital Reports*. Edited by JOHN W. OGLE, M. D., F. R. C. P., and TIMOTHY HOLMES, F. R. C. S. Vol. vi., 1871-'72. 8vo, pp. x.-433. London: J. & A. Churchill, 1873.

WE are glad to witness the issue of another volume of "St. George's Hospital Reports," and, although we have allowed it to remain for some time on the table without critical notice, it may be regarded as by no means the least valuable of recent additions to medical literature.

The first three articles are the "Lettsonian Lectures" of Mr. Henry Lee, and are entitled, respectively, "Syphilitic Urethral Discharges," "On Prostatic Discharges," and "On Non-syphilitic Discharges." Mr. Lee, in the first article, analyzes the experiments of John Hunter, Ricord, Wallace, Waller, Vidal, Rinecker, Rolett, and others, and concludes therefrom that secondary syphilitic discharges may give rise to syphilis; and, if we understand him correctly, also to secondary syphilitic discharges directly. That primary syphilis is readily produced by the inoculation of the virus from a secondary sore, or from a secondary urethral discharge, is too well known for argument; but that secondary symptoms are produced directly without the preëxistence of primary symptoms we can hardly admit without further proof.

In the two following lectures Mr. Lee states his view of the pathology of the glandular discharges, especially the prostatic. He thinks the latter is due to a partial paralysis of the nerves of the part, with a consequent want of power in the involuntary muscular fibres in the gland-substance, rather than to chronic inflammation, which, perhaps, is the more general opinion. Gland-secretions are said not to produce syphilis. The local application of diluted tincture of iron is recommended as the best remedy for these discharges. The articles, although rather practical, lack freshness to the American reader, and are wanting in diagnostic value.

The next article is an interesting report of "A Case of Osteomalacia," by S. W. Moore, Esq. The patient was an

inmate of the Hanwell (insane) Asylum, and was laboring under acute mania when admitted. Mr. M. discusses the morbid anatomy of this disease, and shows the difference between it and rickets. The cause of the removal of the earthy salts and substitution of fat is obscure, but Mr. M. inclines to the opinion of Thudichum that free lactic acid must exist in order to dissolve the phosphates, thus accounting for the rheumatic pains which usually coexist. He alludes to the paper of Marcet, attributing to the colloid character of muscular tissue the power of absorbing crystalloids. "This suggests" (page 65) "that, if osteomalacia is essentially a disease of mal-nutrition, the glairy gelatinous matter bathing the muscles in this disease may be an altered condition of tissue, by which the earthy matter is removed from the bone." He also questions how far the nervous system may exert an influence over the disease. Dr. Ogle, as we shall see farther on, regards it as due to some fault of the nervous system.

"Remarks on the most Common Forms of Cutaneous Diseases in Children" forms the subject of the next paper, by Dr. R. J. Lee. It is mostly devoted to classification.

This paper is followed by an article "On Sudden Death by entrance of Air into Uterine Veins," by Dr. George Cordwent. These remarks are based upon a case of rapid labor, the patient being confined while in the standing posture, and the child dragging the placenta with it to the floor. The attendants heard "a kind of gurgling," the patient grew faint, lost her vision, and immediately expired. The *post-mortem* examination revealed a puffy appearance of a small portion of the fundus of the uterus, which contained air-bubbles. The coronary veins of the stomach were "tensely distended by air," and the right auricle contained air-bubbles. The author draws the conclusion that a too sudden evacuation of the contents of the uterus is very dangerous, and advises leaving the placenta *four hours* after labor before attempting to remove it artificially. We admit that the uterus should not be too hastily emptied, but if the organ is well contracted, we see no reason for leaving the after-birth so long a time as Dr. Ogle suggests.

Dr. H. V. Carter contributes a paper "On the Calculous

Disease in Bombay and some Other Parts of India." The cause of the predominance of the oxalate-of-lime calculi over the uric acid and the phosphatic (which is known to occur in India), Dr. C. attributes to the exclusion of animal food from the diet of the inhabitants.

In "Some Remarks on Inhalation," Dr. R. J. Lee advocates the use of local medication in certain pulmonary and other diseases, laying particular stress upon temperature, and upon steam as a menstruum. He thinks, indeed, that the good results of the treatment, in many instances (whooping-cough, croup, etc.), are due as much to the proper temperature and moisture as to the same combined with a medication.

In an article "On Indicum in the Urine," Dr. Francis Laking states that indicum by decomposition becomes converted into indigo-blue, and is of the opinion that its source is in the carbolic acid normally found in the urine, and that its absence rather than its presence is an evidence of disease.

Quite an elaborate article "On the Employment of Quinine in the Treatment of Rheumatic Fever" is written by A. W. Barclay, M. D., in which it is stated that rheumatism is not essentially an acid disease or condition, but an *acid-generating* condition. He thinks the acid formation, however, is not the only cause of all the symptoms noticeable in acute or chronic rheumatism. While the sweat-glands are pouring out an acid secretion, the urine may be alkaline. This presence of alkalis in the urine is discussed at considerable length. It is stated on page 113: "But, if we ask whether the deposit be due to excess of phosphate, or to excess of alkali, whether its disappearance be due to a reduction in the amount of phosphorus disintegrated, or to a diminished degree of alkalescence, I confess that I have hitherto not succeeded in getting a satisfactory answer. The circumstances are complex, and the chemical results are rather vague; but I am inclined to think that the effect is produced rather in the kidney than in the brain, in the secretion, and not in the tissue-metamorphosis; that the phosphorus is not really present in any increased amount when phosphates are deposited, but that in the act of its removal from the body

its chemical composition is altered, so that it is present as a highly-insoluble salt."

This condition requires treatment as well as the *acid generating*, which is at the same time going on. Continuing the quotation: "Under the influence of quinine, this chemical change ceases, and the presence of phosphorus is no longer indicated by any deposit." The citrate or the bicarbonate of potassium may be administered at the same time.

Mr. Prescott Hewett contributes a very elaborate article—one involving a vast amount of research—"On Congenital Encephalocele and Hydrencephalocele," the fourth of "Contributions to the Surgery of the Head." The article will well repay perusal, as it embraces many important points in reference to diagnosis as well as pathology, and teaches the necessity of careful examination before removing congenital bunches in the neighborhood of the eyes and nose, as well as elsewhere upon the head.

T. P. Pick, Esq., contributes a paper "On Cleft Palate," including a report of eleven cases. Also a paper "On Partial Rupture of Arteries from External Violence," with the report of an interesting case of aneurism of the femoral artery, probably the result of rupture of the middle and inner coats of that artery. It was treated by compression, which resulted in gangrene. The limb was amputated, but death soon followed. We quite agree with Mr. Pick's criticism of the treatment. He thinks that ligature of the artery at an early period would have been more likely to be successful.

An article follows "On the Influence of Impaired Hearing upon the Voice and Speech," by W. B. Dalby, Esq.

Mr. Charles Roberts next follows with an article "On the Therapeutical Action of Sulphur," in which he states that its only action is due to the presence of impurities—sulphurous and sulphuric acids. Hence, by applying the idea to practice, more elegant preparations can be prescribed than the older ones containing commercial sulphur.

A "Case of Femoral Aneurism" is reported by Clement Walter, Esq. The tumor was near Poupart's ligament, and connected with the superficial femoral artery. Six weeks were spent in fruitless efforts at compression, after which the

external iliac artery was ligated, but death took place eighty-four hours after the operation. The limb was probably gangrenous.

"A Case of Cancer of the Upper Lip" (with plate) is contributed by Mr. Edgecome Venning (for a long time mistaken for syphilis), and a case of "Cancer of the Upper Lip following on Lupus," by T. Holmes, Esq. Mr. H. thinks he has seen other examples of cancerous degenerations of ill-nourished cicatrices of lupus, and refers to cases noticed by others.

A very elaborate and practical article "On Contagious Ophthalmia" is contributed by R. Brudenell Carter, Esq. The author thinks the disease may be conveyed in the atmosphere through the agency of spores, as well as by means of the direct contact of matter. He states that "ophthalmia and diseases of the skin are very often associated; and Tilbury Fox has shown that, in a school where ring-worm prevailed extensively, the air of the rooms was loaded with the elements of its characteristic fungi." From these and other data he concludes that the direct contact of contagious matter from sore eyes is not the only means of contagion. Three varieties are given, viz., "affections originating in blepharitis, or follicular inflammation of the margins of the lids; affections originating in so-called 'simple' conjunctivitis, either catarrhal or produced by the direct action of irritating infections, or otherwise noxious external agencies; and affections originating in proliferation or hypertrophy of the lymph-follicles of the conjunctiva."

Mr. T. Holmes contributes "A Case of Aneurism of the Aorta and Innominate Artery." This patient was subjected to a variety of treatment, viz., the application of ice, pressure by means of shot, the internal use of the acetate of lead, the subcutaneous injection of ergotine, ligature of the right primitive carotid and subclavian arteries, and, finally, the patient having survived the operation, but without cure of the aneurism, seven weeks later, galvano-puncture was performed. The patient died five days after. Mr. H. thinks the last-named procedure is advisable when rest has failed to produce benefit, although he admits that his own experience in that treatment has been negative.

T. Whipham, M. B., contributes an article "On Thrombosis in Cases in which the Arterial Walls and Viscera are Natural." Two classes of cases are discussed—namely, those depending on local arteritis, and those depending upon a low degree of vitality in the patient. The cases of the former are said to occur principally in the arteries of the brain, and are marked by convulsive seizures. The cases occurring from the latter cause are frequently attended by faintness, but usually tend to a rapidly fatal termination, and quite suddenly if in certain situations. The article will well repay study, especially in connection with those on similar subjects contributed by Dr. John A. Lidell, of New York, in the *American Journal of Medical Science* during the past year or two.

A very elaborate and quite interesting paper, "Regarding Certain Influences exercised by the Nervous System upon Bone," is contributed by Dr. John W. Ogle. The author has entered into a vast amount of research to prove the influence of the nervous system over the nutrition of bone. He attributes the cause of rickets, mollities-ossium, joint effusions, hypertrophies, atrophies, and brittleness, to some fault of the nervous system. A causative relation is shown to exist between insanity and brittleness and other diseases of bones.

The "Report of Medical Cases for the Year 1870," by Dr. John Cavafy, and the same, for 1871, by Drs. Cavafy and F. Laking, show a great amount of material for study and interesting reports.

The "Report of Surgical Cases" for the same years, by J. Warrington Haward, Esq., is very good, and contains many valuable tables.

The "Report on the Department for Diseases of the Ear," by Mr. W. B. Dalby, is both interesting and practical.

Edgar G. Barnes, M. B., takes upon himself the labor of furnishing a "Report of Maternity Department, from 1854 to 1871, inclusive; with Observations on Revaccination during the Small-pox Epidemic of 1871." This paper was prepared with much care and labor, and contains a great deal which is of practical interest. It closes the volume.

ART. II.—*Handbook of the Theory and Practice of Medicine.* By FREDERICK T. ROBERTS, M. D., B. S. C., M. R. C. P., etc., etc. 8vo, pp. 1052. Philadelphia: Lindsay & Blakiston, 1874.

THE author of this volume has endeavored to present within moderate space the leading points in the pathology, diagnosis, and treatment of all the diseases embraced within the limits of practical medicine, for the use of students of medicine and practitioners. We think the author has succeeded very well in accomplishing his task with clearness; and, although, in a book of the size of the volume before us, there is not room for elaborate discussions, the leading opinions of the day appear to be accurately and concisely stated.

A few chapters are devoted to questions pertaining to symptomatology and general pathology, but the author very soon enters on the consideration of "General Diseases," following with that of "Local Diseases."

In noticing some of the author's special views, our attention is directed to the article "Tuberculosis and Scrofulosis," those forms of disease being considered as identical. *Gray tubercle* is considered the "true" tubercle, and it is said that *yellow tubercle* is certainly not an original product. "It is either derived from the *gray granulations which have undergone a process of caseation*, or from *various inflammatory or other materials which have passed through this change*" (p. 299). The leading opinions of the day concerning the relation of the two products and their causation are stated, with a decided leaning to the view that "catarrhal" and "interstitial," and occasionally "croupous" pneumonitis, give rise to "caseous degeneration" (yellow tubercle). "It is due to a process of partial fatty degeneration, with drying It generally occurs in connection with some morbid product, or where there is a great accumulation of cells pressing upon each other, and is especially met with where the vessels are few, so that the tissue is dry. It is also often seen in scrofulous lymphatic glands, cancer, chronic abscesses, diseased bones, etc." (p. 89).

The author confounds "acute phthisis," or "galloping

consumption," with *rapid tuberculosis*; the disease described as one of the former is evidently one of the latter. According to Flint¹ and Trousseau,² acute tuberculosis is a disease characterized by the rapid accumulation, in large quantity, of gray tubercle, life being usually destroyed before softening can occur, and very soon after the discovery of the lesion. In our notice of the last-named author's book, in the number of this JOURNAL for January, 1874, we quoted that author's view, that the clinical history, as well as the morbid anatomy and pathology, of the two affections is entirely distinct.

That there is some causative relation between the gray and yellow tubercle seems highly probable, but in the present state of pathological advancement, with the many diverse theories in regard to the production of either, it is, perhaps, premature to pronounce very positive opinions. Yet, we are not ready to accept the view that lobar pneumonitis is ever followed by caseous degeneration of its products, constituting consumption, and we are disposed to doubt the occurrence of the same "degeneration" as a frequent result of "catarrhal" or "interstitial" pneumonitis. The clinical history of the vast majority of cases of pulmonary tuberculosis points to its origin without the preëxistence of inflammation, and indicates that the yellow product is an *exudation* occurring either in connection with, or independent of, gray tubercle. Inflammatory affections of the respiratory organs, or, indeed, of any organ, may be an indirect source of tuberculosis by diminishing the vitality of the part, or of the general system, thereby interfering with the nutritive process. Possibly the absorption of effete material into the system may assist in the further deposit of yellow tubercle, or even of the gray; but this, it seems to us, cannot be the only source of either variety.

The author has introduced a chapter on the "Physical Examination of the Chest," which, in a treatise on general practice, is quite essential for the use of students. Indeed, the author seems not to presume any knowledge on the part of the reader, but writes in a manner calculated to instruct from the first principles.

¹ "Principles and Practice of Medicine," 1873.

² "Clinical Lectures," third American edition, 1873.

"Pyæmia and Septicæmia" are treated as identical, and dependent upon the absorption into the system of septic material. This is in accordance with the view we expressed in our notice of Flint's "Principles and Practice of Medicine" in the number of this JOURNAL for August, 1873, and more fully discussed in the notice of Erichsen's "Science and Art of Surgery" in the number for June, 1873. The difference between the symptoms of so-called septicæmia and those of so-called pyæmia is not greater, perhaps, than is sometimes shown in either class alone, using the terms in their more restricted sense. No difference in the nature or chemical composition of the absorbed poison is at the present time demonstrable.

In regard to the pathology of "Cancer," it is stated that "it is not at all improbable that both these theories" (of constitutional and local origin) "are correct in different cases" (p. 309). The author dwells on its *hereditary* nature.

The author classifies "Chronic Bright's Disease" as—"1. Large, white, smooth kidney—chronic desquamative or tubal nephritis." "2. Granular contracted, or cirrhotic kidney—chronic interstitial nephritis." "3. Fatty kidney." "4. Lardaceous or albuminoid kidney." "5. Mixed types." This arrangement is not very different from Dr. Grainger Stewart's classification, except that the *fatty* kidney, as distinct from the fatty stage of the inflammatory variety, or *tubal nephritis* of the author, is introduced. The lines between the various stages of the above-named varieties seem hardly sufficiently well drawn. We fail to notice mention of acute atrophy of the kidney. The author calls especial attention to the relation between hypertrophy of the heart and chronic kidney-disease, but is able to throw no new light upon the subject further than to state the opinion of Sir W. Gull and Dr. Sutton as to the existence of an "arterio-capillary fibrosis," a hyaline-fibroid change in the capillaries throughout the body, leading to hypertrophy of their walls. They think this condition of the capillaries depends upon a fault of the general system, and is the cause of the chronic changes in the kidneys, as well as in the heart, rather than the consequence of kidney-disease. The other views are, perhaps, sufficiently well known.

A condensed chapter on "Diseases of the Skin" closes the volume. It is very well written, by Mr. John Tweedy. The classification is after that of Tilbury Fox.

The treatment of most affections recommended by the author is such as may be approved of. In inflammatory affections depletion is for the most part discouraged, while in adynamic cases the author does not hesitate to advise abundant support by stimulants as well as nutrients.

Of the treatment of "Typhoid Fever," it is stated on p. 167, after directing the hygienic management, etc., that "much difference of opinion has been expressed as to the employment of *alcoholic stimulants*. It is certain, however, that their indiscriminate use may do a great deal of harm, and that they are not nearly as much needed as in typhus, or at such an early period. Often they are not at all required, and it is only in the advanced stages, when the strength has been reduced, and the circulation is feeble, that they are called for usually. Their effects must be closely watched."

In the article "Cholera" (p. 707), the two contrary plans of treatment are mentioned, that for "*checking the diarrhoea*," and the "*eliminating*" plan. It is stated that, apart from theoretical considerations, experience has proved that "most decidedly *the evacuations ought to be checked as soon as possible*. . . . *Opium* is the great remedy for this purpose," etc.

While we regard the efforts of Dr. Roberts very highly, and think he has written a first-rate book for the purposes for which it is designed, we cannot compare his volume with the great work of Dr. Flint, of our own country. We heartily recommend it, however, as a very pleasant and readable one.

ART. III.—*The Place of the Physician. Being the Introductory Lecture at Guy's Hospital, October, 1873, with Other Essays.* By JAMES HINTON, Aural Surgeon to the Hospital. London: Henry S. King & Co., 1874. Pp. 66.

THE essays added to the introductory lecture are entitled "On a Law of Human Life," and "On the Relation between the Organic and Inorganic Worlds." The author holds some

peculiar views in regard to man and his place in the world; but it would be impossible to present them in a few words, as they are not easy to understand, even by the closest study of his works.

ART. IV.—*Lessons in Laryngoscopy; including Rhinoscopy and the Diagnosis and Treatment of Diseases of the Throat.* By PROSSER JAMES, M. D., M. R. C. P., etc., Lecturer on Materia Medica and Therapeutics at the London Hospital; Physician to the Hospital for Diseases of the Throat. London: Baillière, Tindall & Cox.

THE author, in the preface, informs us that "this little volume is essentially practical," and is "based on many years' experience in practising and treating the art of laryngoscopy, my first *public* demonstration having been given at the Metropolitan Dispensary in 1860."

The first ten chapters are devoted to the description of the forms of apparatus in use; light, reflected and direct; the art of demonstrating, the difficulties and obstacles encountered, the anatomy of the larynx, rhinoscopy, the literary history and scientific theory of the laryngoscope.

In Chapter V. he thus clearly expresses himself on the subject of lateral inversion of the image:

"Some students come to us with a notion that there is a lateral inversion of the image in the laryngeal mirror. There is no such thing. The idea can only result from a confusion of terms. Right and left are words that each speaker is apt to refer to himself as a standard, but almost every clinical clerk is aware of the necessity of discriminating between right and left side of the patient and himself. Rather ludicrous mistakes do, however, occur. For example: I have seen a gentleman listening on the right side of a patient's chest for the sounds of the heart, and another tapping the left epigastric region to elicit the dullness he was taught to seek for over the liver. The same confusion lurks in the error about lateral inversion in laryngoscopy. The physician sits opposite to the patient and looks at the image formed in the mirror held in the fauces. The right hand of the physician is, therefore, im-

mediately opposite to the left hand of the patient. It is the same with every other part—the right foot or right eye of every observer is opposite the left of the person facing him. In learning the use of the ophthalmoscope the student does not so readily fall into error, because it is so much more easy to correct himself, as he only examines one eye, right or left, at a time.

“In the laryngeal mirror, however, he sees both vocal cords at once, but they are not inverted. He must remember that it is the image of the patient's cords he sees, not his own. The standard of right or left must, therefore, be referred to the patient, and then it will be manifest that as the left cord of the patient is opposite the right of the physician, so it appears on what the observer calls the right side of the mirror, but what would be called by the patient its left side.”

Chapter VIII. is devoted to rhinoscopy, or exploration of the posterior nares by reflected light. The author says:

“In the first place, to explore the posterior nares, it is desirable to select a small mirror—one half an inch in diameter will always be found large enough. Most writers direct the rhinoscopic mirror to be fixed to the stem at a right angle, but this is not essential, for, as already stated, a view of the posterior nares may be obtained by simply turning upward the face of the ordinary laryngeal mirror. As a rule, it may be found to facilitate the examination to have the angle a little less obtuse than usual for laryngoscopy, but the stem of the mirror may at any time be somewhat bent, in order to change the angle slightly. It is, however, not desirable for the beginner to indulge too much in this practice, as it is apt to render him more ready to blame the shape of his instrument than his own deficient patience. Very great variations are to be obtained by depressing or raising the stem of the mirror. By sufficiently depressing the handle the face may be made to assume a vertical position, while raising the handle makes it more and more oblique.”

Many writers assert that in a large number of cases it is quite impossible to make a posterior rhinoscopic examination. Our own experience agrees with that of Dr. James, who says: “For ordinary diagnostic purposes the most unpromising patient may be taught to tolerate the examination.”

In the chapter on the "History of Laryngoscopy," the author states that as early as 1856 he constructed a laryngoscope which he employed to aid him in the treatment of an individual case, but at that time he had not the opportunity of following up the subject, nor did he foresee its importance. He puts forward no claim to priority as a discoverer of the laryngoscope, but says it is not disputed that he was "the first person to apply topical remedies by the aid of the faucial mirror."

The early efforts and discoveries of Babington, Liston, Türch, Leoret, Bennati, and others, are referred to, but to Czermak is ascribed the honor of having first proved the practical value of the laryngoscope as a means of diagnosis in diseases of the throat.

A portion of Chapter XI. is devoted to the mention or mere enumeration of the most important diseases of the larynx.

Chapters XII., XIII., and XIV., contain the author's views on what he terms "Laryngoscopical Therapeutics;" also a description of brushes, probangs, syringes, insufflators and the various instruments employed for the removal of growths from the larynx.

For insuring the removal of the whole growth he thinks Stoerh's new guillotine is the best instrument, but regards the common forceps as safer, and not so liable to cut away normal tissue. The douche is recommended in the treatment of nasal affections, and no allusion is made to injuries to the ear resulting from its use; the author undoubtedly concurs in opinion with the majority of those engaged in the treatment of diseases of the throat and nose, that, when carefully and intelligently employed, it is harmless. Insufflations of astringent and anodyne powders into the larynx, in phthisis and other diseases, are recommended. He says: "In this country" (England) "they have not been as fairly tried as they deserve."

We have used insufflations extensively, in hospital and private practice, and our experience has taught us that they are less irritating than solutions applied on the brush. Iodoform applied in this way, of which the author makes no mention, we have found especially useful in the ulceration of phthisis and syphilis.

Several varieties of inhalers and atomizers are described, among others, a very simple glass apparatus, his own invention, for producing a spray by means of the old-fashioned India-rubber hand-ball contrivance; the bottle for holding the medicated liquid is dispensed with, and a cup attached to the upper end of the tube is substituted. We have used this form of atomizer, and in ordinary cases have found it quite sufficient; but, for producing a full, strong, and steady spray, there is nothing that can be compared with the tubes made by Dr. Sass, of this city, employing compressed air instead of the hand-ball contrivance.

It is to be regretted that the author has not devoted more pages to the consideration of diseases of the larynx. In the second edition, we hope this deficiency will be met.

We trust, also, that he will give us a full report of the cured case of laryngeal phthisis, a handsome plate of which is given in the Appendix; such results are so rare that, when one has the good fortune to carry a case to recovery, the minutest details of every thing pertaining thereto should be given to the profession.

We can cordially recommend this little book to the student and general practitioner; we know of none better. As a manual for ready reference, it contains all that is necessary for acquiring a practical knowledge of the art of laryngoscopy and the usual methods for employing successfully topical applications to the larynx.

ART. V.—*A Universal Formulary: containing the Methods of preparing and administering Official and Other Medicines.* The whole adapted to Physicians and Pharmacutists. By R. EGLESFIELD GRIFFITH, M. D. Third edition, carefully revised and much enlarged, by JOHN M. MATSCH, Phar. D., Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy. With Illustrations. Philadelphia: Henry C. Lea, 1874.

THIS well-known work is one of great value to druggists, and to physicians who prepare their own medicines, and contains a variety of information of interest alike to physician and apothecary. The name of the editor of the present edi-

tion is a guarantee of the efficiency with which the labor of revision has been done. The consolidation of the London, Edinburgh, and Dublin Pharmacopœias has rendered it necessary to make changes in all the formulas based on the old pharmacopœias; and the same care has been given to the formulas derived from German pharmacopœias, now superseded. Many obsolete preparations have been discarded, and replaced by new ones of acknowledged merit. The whole number of formulas is increased to the extent of one hundred pages. The portion of the volume devoted to pharmaceutical manipulation is very complete, and includes a full description, with illustrations, of the latest and most elegant methods of preparing compounds.

ART. VI.—*Galvano-Therapeutics: A Revised Reprint of a Report made to the Illinois State Medical Society, 1873.*

THE author's name does not appear on the title-page of this reprint, but, by reference to "The Transactions of the Illinois State Medical Society," we see that the report was made by Daniel Prince, M. D., of Jacksonville, Ill. The report is a concise and well-written essay on the clinical uses of galvanism, illustrated with some interesting cases, and rendered valuable by many practical suggestions.

ART. VII.—*Lectures on the Clinical Uses of Electricity. Delivered in University College Hospital.* By J. RUSSELL REYNOLDS, M. D., F. R. S. Second edition. Philadelphia: Lindsay & Blakiston, 1874.

THESE lectures were originally reported in the *Lancet*, and, having proved acceptable to the profession, have been a second time revised by the author, in order to adapt them to the recent advances in electro-therapeutics. We notice several changes, and some important additions.

BOOKS AND PAMPHLETS RECEIVED.—Felonies, Homicide; its Penalty and the Execution thereof, judicially. By Alonzo Calkins, M. D. Read before the Medico-Legal Society of the City of New York, September 25, 1873. Published by the Society.

A Treatise on Therapeutics, comprising Materia Medica and Toxicology, with Especial Reference to the Application of the Physiological Action of Drugs to Clinical Medicine. By H. C. Wood, Jr., M. D., Professor of Botany, and Lecturer on Diseases of the Nervous System, in the University of Pennsylvania, etc. Philadelphia: J. B. Lippincott & Co., 1874.

On Diseases of the Chest: being Contributions to their Clinical History, Pathology, and Treatment. By A. T. H. Waters, M. D., Lecturer on Medicine at the Royal Infirmary School of Medicine, Physician to the Royal Infirmary, etc., etc. Second edition, revised and enlarged. Philadelphia: Lindsay & Blakiston, 1874.

Lectures on Fever. Delivered in the Theatre of the Meath Hospital and of County Dublin Infirmary. By William Stokes, M. D., D. C. L., Oxon., F. R. S., Regius Professor of Physic to the University of Dublin, etc. Edited by John W. Moore, M. D., etc. London: Longmans, Green & Co., 1874.

Dictionary of Elevations and Climatic Register of the United States; containing also the Latitude, Mean Annual Temperature, and Total Annual Rainfall of Many Localities. By J. M. Toner, M. D. New York: D. Van Nostrand, 1874. Pp. 93.

Diseases of the Skin. In Twenty-four Letters on the Principles and Practice of Cutaneous Medicine. By Henry Evans Cauty, Surgeon to the Liverpool Dispensary for Diseases of the Skin. London: J. & A. Churchill. Liverpool: Adam Holden, 1874.

Legal Responsibility in Old Age. Based on Researches into the Relation of Age to Work. By George M. Beard, M. D. Read before the Medico-Legal Society of the City of New York, March, 1873. New York: T. L. Clacher, 1874. Pp. 42.

Observations on the Pathology and Treatment of Cholera. The Result of Forty Years' Experience. By John Murray, M. D., Inspector-General of Hospitals, late of Bengal. London: Smith, Elder & Co., 1874.

A Retrospect of Medicine. A Half-Yearly Journal. Edited by W. Braithwaite, M. D., and James Braithwaite, M. D., London. Vol. LXVIII., July to September, 1873. London: Simpkin, Marshall & Co.

Hydrate of Chloral as an Anti-Spasmodic on the Rigid Os Uteri in Parturition. By Salvatore Caro, M. D. From Transactions of the Medical Society of the State of New York, 1872.

A Case of Epithelioma of the Lower Eyelid; Removal. Blepharoplasty by Sliding Flaps. By Thomas R. Pooley, M. D., Ophthalmic Surgeon to the Charity Hospital.

State Charities Aid Association. Report of the Special Committee, appointed to take Active Measures in regard to the Erection of a New Bellevue Hospital. Pp. 14.

Special Report of the Commissioners of Public Charities, on the Number and Condition of the Incurable Insane in Illinois. By Fred. H. Wines, Secretary, 1874.

On Naso-Pharyngeal Polypi. By H. B. Sands, M. D. Reprinted from Dr. Brown-Séquard's Archives of Scientific and Practical Medicine, No. 6.

Catalogue of the Library of the Surgeon-General's Office, United States Army. In Three Volumes. Vols. I. and II. Washington, 1873.

Epidemic Diseases as dependent upon Meteorological Influences. By C. Spurzig, M. D. St. Louis: Abner, Menning & Co., 1874. Pp. 58.

Report of the State of the New York Hospital and Bloomington Asylum, for the Year 1873. New York: D. Van Nostrand, 1874.

Catalogue of the Trustees, Professors, and Students, of the Jefferson Medical College of Philadelphia. Session of 1873-'74.

Second Annual Report of the State Board of Health of Minnesota. January, 1874. St. Paul, 1874. Pp. 98.

Reports of the Trustees and Superintendents of the Butler Hospital for the Insane. Providence, R. I., 1874.

Calendar of the University of Michigan for 1873-'74.

Miscellany.

Tribute of Respect to Prof. McCready.—At a meeting of the Medical Board of Bellevue Hospital, held January 31, 1874, Dr. Clark, chairman of the Committee on the Resignation of Dr. McCready, presented the following report:

The Medical Board of Bellevue Hospital cannot part with their long-trying and so worthy associate, Dr. Benjamin McCready, without expressing their regret that he has found himself compelled by resignation to sunder official relations which have been in a high degree agreeable and profitable to all its members.

In twenty-five years of associated labor they have learned to appreciate him as a scholar, a learned and skillful physician, and a gentleman; the example of his punctuality in duty, the application of his large stores of medical knowledge to the relief of the sick, his wise counsels in the management of the hospital, his uniform courtesy to all his colleagues, his kindness and devotion to the sick under his charge, the clinical instruction by which he has greatly aided in forming and stor-

ing the minds of the hospital pupils, and his professional eminence, are the property of the institution, and make up part of its history.

In his retirement from hospital duties, he takes with him the highest respect and the best wishes of this Board.

ISAAC E. TAYLOR, *President of Medical Board.*

(Signed)

A. CLARK, *Chairman of Committee.*

Note of Explanation by Dr. H. B. Sands.—In the NEW YORK MEDICAL JOURNAL for January, 1874, I published a case of hæmorrhage from the internal carotid artery, and stated that, so far as I was aware, this case was the only recorded one in which a lesion of the internal carotid had been treated by the application of a double ligature to the injured vessel.

My attention has just been called to an article in the *Nashville Journal of Medicine and Surgery* for February, 1874, in which the editor, Dr. Bowling, awards the priority of the operation to Prof. W. T. Briggs, of Nashville, who, in February, 1871, treated successfully a case of traumatic aneurism of the internal carotid, by laying open the sac and applying ligatures to the wounded vessel above and below the bleeding point. The case is published in the *Nashville Journal of Medicine and Surgery* for March, 1871.

I regret exceedingly to have overlooked Dr. Briggs's paper, and desire herewith to apologize to him for an act of unintentional injustice.

Permit me also to correct a statement made by Dr. Bowling in the article referred to. In a speciously-written footnote, he endeavors to show that I have quoted Dr. Twitchell as having tied the internal carotid artery, whereas the artery really tied was the common carotid. A simple perusal of the context will prevent the reader from being misled, and will convince him that I have quoted Dr. Twitchell correctly.

H. B. SANDS, M. D.

Bellevue Hospital Medical College Alumni Association.—At a meeting held at the College, on the evening of March 9th, the following officers were elected for the ensuing year:

President, Thomas R. Pooley, M. D. ; First Vice-President,

J. D. Bryant, M. D. ; Second Vice-President, Robert Newman, M. D. ; Recording Secretary, George W. Wells, M. D., 144 Broadway ; Corresponding Secretary, Charles A. Leale, M. D., 239 West Fifty-third Street ; Treasurer, Henry Raphael, M. D. ; Historian, F. A. Castle, M. D.

Council : Prof. W. T. Lusk, M. D. ; William L. Barret, M. D., St. Louis, Mo. ; Frank H. Bosworth, M. D. ; James F. Ferguson, M. D. ; William G. Harrison, Jr., M. D., Baltimore, Md. ; Van Buren Hubbard, M. D., U. S. A. ; James Tabor Johnson, M. D., Washington, D. C. ; E. C. Harwood, M. D. ; John J. Mason, M. D. ; R. J. McKay, M. D. ; William H. Van Wyck, M. D. ; Walter G. Wylie, M. D. ; Leroy M. Yale, M. D. ; James T. Young, M. D., Washington, D. C. ; David C. Carr, M. D. ; John W. S. Arnold, M. D. ; P. R. Cortelyou, M. D., Brooklyn ; J. H. Burchard, M. D. ; W. F. Fleurer, M. D. ; F. S. Dennis, M. D., New Jersey.

Joseph Mather Smith Annual Prize.—This fund is endowed by the relatives of the late Dr. Smith, in memorial of his services as professor in the College of Physicians and Surgeons of New York from 1826 to 1866. Under its provisions an annual prize of \$100 will be awarded for the best essay on the subject for the year, presented by an alumnus of this college, or a member of the graduating class. The prize committee, consisting of the President of the College, the Professor of Pathology and Practical Medicine, and the President of the Alumni Association, shall designate each year the subject for the following year. The competing essays should be sent to the President of the College on or before the 1st of February in each year ; each essay to be signed with a device or motto, and accompanied by a sealed envelope inscribed with the same device or motto, and containing the name of the author. The envelope of the successful essay to be opened, and the prize awarded, at the annual commencement. The subject of the prize to be awarded in March, 1875, is "Hygiene, in either of its Special Departments."

Care of the Insane in Illinois.—We have received the report of the Commissioners of Public Charities on the number and condition of the incurably insane in the State of Illinois, from which it appears that there are in the State a little over three

thousand insane persons, about four-fifths of whom the Commissioners believe to be practically incurable. The entire hospital accommodation for insane in the State is said not to exceed eleven or twelve hundred beds; but over five hundred beds will be added by the completion of the Northern and Southern Hospitals. About thirteen hundred insane patients, it appears, will even then be left unprovided for, except in county almshouses and jails, and in private families. The Commissioners give a shocking account of the condition of those at present confined in almshouses, or left in the care of private parties, and urge on the Legislature the necessity of taking immediate measures to remedy the evil. We trust, for the sake of humanity, that their appeal will not be made in vain.

The University of Pennsylvania.—The new building of the hospital of this university is progressing rapidly, and will probably be ready for occupation by next autumn. The following appointments have been made of professors in the Hospital of the University of Pennsylvania: D. Hayes Agnew, M. D., Professor of Clinical Surgery; John Neill, M. D., Associate Professor of Clinical Surgery; William Pepper, M. D., Professor of Clinical Medicine; William Goodell, M. D., Professor of Clinical Obstetrics; William F. Norris, M. D., Professor of Ophthalmology; George Strawbridge, M. D., Professor of Otology.

These, with certain lecturers yet to be appointed, will constitute the staff of the hospital. The Board of Managers consists of eighteen members: five elected by the Board of Trustees, three by the Society of the Alumni, three by the contributors, together with the seven Professors of the regular Faculty.

College of Physicians and Surgeons of New York.—The annual commencement exercises of this college were held at Steinway Hall, March 3d, when eighty-four gentlemen received their degrees. The first graduating Faculty prize was awarded to Henry J. Hineman for the best thesis, on "Nasopharyngeal Polypus." The second graduating prize was awarded to Charles H. Langdon for a thesis on "Aphasia." The Alumni Association prize of \$200 was awarded to A. H. Buck, M. D., for a thesis on the "Mechanism of Hear-

ing." The Thomas prize was awarded to J. E. Stillwell for a report on "Clinique for Diseases of Women." The Otis prizes were awarded to Fred. A. Lyons and E. B. Foote, Jr., for the best report of "Venereal Lectures and Clinique." The Seguin prize was awarded to W. H. Welch, for the best report on "Clinique for Nervous Disorders." The valedictory address was delivered by Porter Farley, A. M., M. D.

Army Medical Rank.—From all parts of the country, wherever two or three medical men are gathered together, comes some expression of opinion regarding the status of the army medical officer, as it is, and as it should be. Resolutions, short but emphatic, and covering all the essential points, show that the profession thoroughly appreciates the question. It is greatly to the honor of the profession that men of first-rate abilities have been found ready to accept positions in the Army, and maintain the dignity of the service; but if that service is to be rendered precarious, and even less desirable than it has been, by inconsiderate legislation, it will certainly be found impossible to keep up the high standard that has hitherto characterized the medical staff of the Army of the United States.

Bellevue Hospital Medical College.—The commencement exercises of this college were held at Steinway Hall, February 26th. One hundred and sixty-three gentlemen received the degrees of Doctor of Medicine. The first Taylor prize, of \$100, was awarded to Frederick S. Dennis, of New Jersey; the second Taylor prize, of \$50, was won by David C. Cocks, of New York. The valedictory address was delivered by Smith E. Winn, of Kentucky. After the ceremonies the graduating class adjourned to Delmonico's, at the invitation of the Faculty, and "fared sumptuously."

The Army Medical Museum and Library.—We are reminded, by the two imposing volumes that constitute a part only of the catalogue of the library at the Surgeon-General's office, that the Senate has reduced the usual annual appropriation of \$10,000, for the library and museum, to \$5,000. This is especially unfortunate, since the burden of the privation will fall upon the library. Certain expenditures are absolutely neces-

sary for the mere preservation of the museum, and all the means at the disposal of the Surgeon-General will be required for that purpose. The library, under the energetic management of Dr. J. S. Billings, has been rapidly growing in size and value, and we regret exceedingly that it should have been thought necessary to practise economy in that particular direction.

University of the City of New York.—The thirty-third annual commencement of the Medical Department of this University was held at Steinway Hall, February 17th. Diplomas were granted to a class of seventy-six. The following gentlemen received prizes: T. C. Ainsworth, J. S. Carreau, H. F. Kingsley, I. Gutierrez, P. J. Kergan, John Wilbur, G. A. Balcom, and S. B. Young. R. T. Dearborn delivered the valedictory address.

The American Microscopical Society.—The following are the officers of this Society, recently elected: John B. Rich, M. D., President; O. G. Mason, William H. Atkinson, M. D., and John Frey, Vice-Presidents; D. H. Goodwillie, M. D., Corresponding Secretary; J. P. Wintringham, Recording Secretary; Prof. T. d'Oremieulx, Treasurer; Samuel Jackson, Curator; S. G. Perry, M. D., Librarian.

To Contributors.—We have been obliged to omit a large amount of valuable matter which was in type for the present number of the JOURNAL, including many reports of interesting cases, recent translations, book notices, and a variety of news and miscellany. We must therefore ask the indulgence, until our issue for May, of those of our contributors who may be disappointed.

The New York Neurological Society.—We learn from a prospectus that a reorganization of this Society is contemplated. The time of the first meeting is not announced. The prospectus is signed by Drs. William A. Hammond, Alexander Murray, J. Marion Sims, John C. Peters, and Max Herzog.

An International Sanitary Congress.—The Foreign Minister of Austro-Hungary is making preparations for an international congress on sanitary matters and quarantine, to which representatives of all nations will be invited.

Army Intelligence.

Official List of Changes of Stations and Duties of Officers of the Medical Department, United States Army, from February 14, 1874, to March 13, 1874.

BAILEY, E. J., Surgeon.—To report in person to the commanding general, Department of California, for assignment to duty. S. O. 45, A. G. O., March 2, 1874.

BREWER, JNO. W., Assistant Surgeon.—Assigned to duty as Post-Surgeon at Fort Warren, Boston Harbor. S. O. 49, Military Division of the Atlantic, March 5, 1874.

CLEARY, P. J. A., Assistant Surgeon.—Assigned to duty at Camp Supply, Indian Territory. S. O. 34, C. S., Department of the Missouri.

GARDNER, W. H., Assistant Surgeon.—Assigned to duty at Fort Union, New Mexico. S. O. 34, Department of the Missouri, March 5, 1874.

GHISELIN, J. T., Surgeon.—Relieved from duty as Attending Surgeon at Portland, Oreg., to enable him to avail himself of his leave of absence. S. O. 18, Department of the Columbia, February 4, 1874.

HEITZMANN, C. L., Assistant Surgeon.—Assigned to duty with troops, under orders for field service in vicinity of Fort Laramie, Wyoming Territory. S. O. 22, C. S., Department of the Platte.

MUNN, C. E., Assistant Surgeon.—Assigned to temporary duty at Fort Independence, Boston Harbor. S. O. 49, C. S., Military Division of the Atlantic.

RANDOLPH, JNO. F., Surgeon.—Assigned to duty as Chief Surgeon, with troops under orders for field service in the vicinity of Fort Laramie, Wyoming Territory. S. O. 22, Department of the Platte, February 14, 1874.

ROSE, GEO. S., Assistant Surgeon.—Assigned to temporary duty at Yuma Depot. S. O. 11, Military Division of the Pacific, February 9, 1874.

SIMPSON, JOSIAH, Surgeon.—Died at Baltimore, Md., March 3, 1874.

WIGGIN, A. W., Assistant Surgeon.—Detailed temporarily for duty as Attending Surgeon at Portland, Oreg. S. O. 18, C. S., Department of the Columbia.

WILSON, ALFRED D., Assistant Surgeon.—Granted leave of absence, on surgeon's certificate of disability, for sixty days. S. O. 47, Military Division of the Atlantic, March 3, 1874.

Obituary.

CHARLES LEGROS, *Chevalier de la Légion d'Honneur, Membre de la Société de Biologie, Professor Agrégé à l'Ecole de Médecine.* By the death of M. Legros the Paris School of Medicine has lost one of its most promising members, and medical science one of her most devoted followers. On the 25th of December M. Legros succumbed to an attack of *ictère grave*, supposed by his colleagues to be the manifestation of a septicæmic poisoning contracted in his laboratory. He was born at St.-Chef, in 1834, was a graduate of the Paris School of Medicine, and *interne* of the hospitals of that city. In 1865, while *interne* at the Hôtel Dieu, he received the Cross of the Legion of Honor for his devotion to the cholera patients. His "*Recherches Experimentales sur le Choléra*," written at this time, received the Prix Bréant of two thousand francs from the Académie des Sciences. At the close of his *internat* he became the assistant of Charles Robin, and from that time until his death devoted himself to scientific pursuits, the fruits of which are found principally in contributions to the scientific societies and journals. Among the most notable are the following: "*Sur les Tissus érectiles*;" "*L'Origin des Canaux sécréteurs de la Bile*;" "*Sur la Génération spontanée*;" "*Sur l'Evolution des Follicules dentaires*;" "*Histological Notes to Richet's Anatomy*;" a "*Traité d'Electricité médicale*;" and a thesis, "*Sur les Nerfs vaso-moteurs*."

During the war of 1870 he was surgeon-in-chief of the ambulance established by the late Marquis of Hertford, and, during the unfortunate night assault upon the plateau of Avron, he was complimented for the bravery with which he sought to rally the repulsed and demoralized troops. The Commune found him at his work again in his laboratory and claimed his services, but he escaped to Versailles, was again placed in charge of an ambulance, and reentered the city with the troops on the 25th of May.

In January, 1873, he was made Professor Agrégé, and now he is cut off in the prime of life, at the moment when, ripened by years of patient study and observation, he was entering

upon the period of his greatest usefulness. Truly, as Prof. Robin writes to a friend in this city, "it is an irreparable loss for science." A conscientious worker, a clear, unprejudiced reasoner, as thorough in observation as he was enthusiastic in his love for science, he leaves to all who have known him the memory of a man learned, upright, generous, and modest.

L. A. S.

DR. FORBES WINSLOW, whose death occurred in London, early in March last, was born in 1810. He graduated in Aberdeen, and joined the Royal College of Surgeons in 1835. He began his contributions to medical literature early in life, and from the first showed an inclination toward the study of insanity. In 1848 he established the *Quarterly Journal of Psychological Medicine and Mental Pathology*. In 1853 he was elected President of the Medical Society; in 1857 President of the Association of Medical Officers of Insane Asylums; and in 1859 Commissioner of Lunacy. He was the author of several large works on mental and nervous diseases, and was looked upon as high authority in that branch of medicine.

PETER ALLEN, M. D., F. R. C. S., Edinburgh, died in London, January, 1874, in his forty-ninth year. Dr. Allen was known to the profession in this country chiefly through his contributions to aural surgery. He occupied the position of Aural Surgeon and Lecturer in Aural Surgery to St. Mary's Hospital.

DR. AUGUST HERMANN, senior surgeon to the hospital in Prague, and Professor Extraordinary of Surgery in the University, died of hydrophobia on January 7th. He had been bitten slightly in the hand by a greyhound, about six weeks previously.

DR. FRANCIS HOY died recently in Columbus, Ohio, at the ripe age of one hundred and three years and fifty-nine days. Dr. Hoy was born in Bavaria, December 8, 1770, and practised medicine in his native country till 1834, when he settled in the United States.

SURGEON JOSIAH SIMPSON, U. S. Army, died in Baltimore, Md., March 3d, aged fifty-nine years.

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[No. 5.]

Original Communications.

ART. I.—*Frost-bite, with Illustrative Cases.* By CHARLES K. WINNE, M.D., Buffalo, N. Y., late Assistant-Surgeon U. S. A.

THOUGH several of the following instances of suffering or destruction, caused among large bodies of men by privation and prolonged exposure to extreme cold, have more historical interest than clinical value, yet it may not be unprofitable to cursorily allude to them as a preface to the remarks upon the pathology of frost-bite.

Long-continued hardship from exposure and cold, in one of the last campaigns of Lucullus in Armenia, is described as having so far relaxed the bonds of discipline as to result in mutiny and retreat.¹ Plutarch says: "The snow fell almost constantly; and, when the sky was clear, the frost was so intense that by reason of the extreme cold the horses could hardly drink of the rivers; nor could they pass them but with the utmost difficulty, because the ice broke, and cut the sinews of their legs. Besides, the greater part of their march was through close and woody roads, where the troops were daily wet with the snow that lodged upon the trees."

¹ Plutarch, "Lucullus," Langbeane's translation.

From the graceful and perspicuous narration of Xenophon,¹ we learn that in the famous retreat they marched across the high table-lands of Armenia. "Through much snow. . . . the third day's march was extremely troublesome, as the north wind blew full in their faces, completely parching up every thing, and benumbing the men. . . . The depth of the snow was a fathom, so that many of the baggage-cattle and slaves perished, with about thirty of the soldiers." As a result of these marches, many of the troops suffered from exhaustion and snow-blindness, while others "had their toes mortified by the cold."²

The army of Alexander Severus, according to Gibbon,³ also suffered greatly in the Persian campaign, as, "in repassing the mountains, great numbers of soldiers perished by the badness of the roads and the severity of the winter season."

Philip de Comines⁴ speaks very feelingly of the hardships endured in the expedition of the Duke of Burgundy into Franchemont in 1468 (which, by-the-way, was one of the memorable cold winters), and says, moreover, "For three days together the duke's attendants could get no wine but what they cut out with a hatchet; for it was frozen in the pipes, and, the ice being thick and entire, they were forced to cut it out in pieces, which they carried away in their hats and baskets as they thought fit."

In 1708, during the operations of Charles XII. in the Ukraine,⁵ "a rigorous winter commenced, which to the Swedes, who were unprovided with proper clothing and necessaries, was so far insupportable that in one march two thousand of them perished with cold."

The horrible incidents attending the retreat from Moscow

¹ Xenophon, "Anabasis," book iv., chap. v., *et seq.*, Bohn's edition.

² Curson says ("Travels in Armenia"), owing to the rigorous climate, death from frost-bite in Armenia is so common, that "there is a custom, or law, in the mountains of Armenia, that every summer the villagers go out to the more dangerous passes and bury the dead whom they are sure to find."

³ "Decline and Fall," etc., vol. i., chap. viii., p. 357. Murray, London, 1838.

⁴ "Mémoires," vol. i., book ii., chap. xiv., p. 162.

⁵ "Rees's Encyclopædia," art. "Charles XII."

in 1812, related by many of the actors in that dreadful tragedy, are most fully narrated by Labaume¹ and Larrey, and from the sombre pages of the former the following extracts are drawn, which paint in vivid and forcible colors the agonies he not only witnessed but endured: "The sun, enveloped by the thickest mists, disappeared from our sight, and the snow, falling in large flakes, in an instant obscured the day, and confounded the earth with the sky. The wind, furiously blowing, howled dreadfully through the forests, and overwhelmed the firs, already bent down with the ice; while the country around, as far as the eye could reach, presented unbroken one white and savage appearance. The soldiers, vainly struggling with the snow and the wind that rushed upon them with tempestuous violence, could no longer distinguish the road; and, falling into the ditches which bordered it, there found a grave. Others pushed on toward the end of their journey, scarcely able to drag themselves along. They were badly mounted, badly clothed, with nothing to eat, nothing to drink, shivering with the cold, and groaning with pain. Becoming selfish through despair, they afforded neither succor nor even one glance of pity to those who, exhausted by fatigue and disease, expired around them. . . . The rigor of the frost soon seized on their benumbed limbs, and penetrated through their whole frames. Stretched on the road we could distinguish only the heaps of snow that covered them, and which, at almost every step, formed little undulations like so many graves. . . . The army lost its courage and military attitude. The soldier no longer obeyed his officer; the officer separated himself from his general. . . . Many were reduced by excessive cold and hunger to a state of frantic stupidity, in which they roasted the dead bodies of their comrades for food, or even gnawed their own hands and arms. Some were so weak that, unable to lift a piece of wood or roll a stone toward the fires which they had kindled, they sat upon the dead bodies of their comrades, and with a haggard countenance steadfastly gazed upon the burning coals. No sooner was the fire extinguished than these living spectres, no longer possessing the power to rise,

¹"Campaign in Russia, by Eugène Labaume, Captain," etc. London, 1816, seventh edition, pp. 293, 402.

fell by the sides of those on whom they had sat. We saw many who were absolutely delirious. To warm their frozen feet, they plunged them naked into the middle of the fire. Some with a convulsive laugh threw themselves into the flames, and, uttering the most piercing cries, perished in horrible convulsions; while others, equally insane, immediately followed them, and experienced the same fate."

Larrey¹ says, in his long and minute description of the marches during the intense cold: "On pouvait alors à peine se tenir debout, et exécuter de simples mouvemens. Celui qui perdait l'équilibre et qui tombait à terre, était aussitôt frappé d'une stupeur glaciale et mortelle. Nous trouvâmes sur la route un grand nombre de morts. . . . Enfin, nous étions tous dans un tel état d'abattement et de torpeur, que nous avions peine à nous reconnaître les uns les autres. On marchait dans un morne silence. L'organe de la vue et les forces musculaires étaient affaiblies au point qu'il était difficile de suivre sa direction et de conserver l'équilibre. L'individu chez qui il venait à être rompu tombait aux pieds de ses compagnons, qui ne détournaient pas les yeux pour le regarder."

In the expedition of Bou Thaleb, in 1846, the troops were overwhelmed with snow, so that, out of a command of 2,800 men, 208 perished outright from cold. Among the survivors, 1,800 suffered from moderate degrees of frost-bite, requiring no special treatment, and 532 were admitted to hospital; 55 of the latter number were operated upon, with three deaths, while the remainder received purely medical treatment, with 19 deaths.

The principal medical facts are thus mentioned by Boudin,² quoting from the medico-chirurgical report of Mr. Shrimpton, by whom the observations were made and reported: "La mort a frappé déjà et frappe encore sous nos yeux un grand nombre de victimes. La route est jonchée de cadavres, tombés à droite et à gauche du chemin; de soldats engourdis qui ne peuvent se soutenir. Ceux que le froid a saisis et empêche d'avancer refusent tout secours. En vain nous cherchons à

¹ "Mémoires de Chirurgie Militaire et Campagnes," tome iv., pp. 105-107.

² "Traité de Géographie et de Statistique Médicales," tome i., p. 408.

en encourager quelques-uns, nous tentons de les relever et de les mettre en mouvement. Les uns, qui ont le sentiment d'une fin prochaine, nous repoussent brusquement ; d'autres, qui ne souffrent pas et qui s'endorment doucement dans la mort, nous supplient de les laisser tranquilles et nous disent qu'après quelques minutes de repos il se remettront en route. Nous chargeons sur des cacolets le plus de ces hommes qu'il nous est possible et nous les y faisons attacher solidement. Chez plusieurs qui marchent encore et se plaignent seulement d'une difficulté dans la progression, se remarquent déjà les signes avant-coureurs d'une mort prochaine ; engourdissement général ; douleur dans les membres et aux aines, contraction musculaire faible et incertaine, facies rouge, tuméfié, lèvres bleuâtres ; yeux saillants ; lividité de la peau, gonflement des mains, pouls petit et faible ; respiration lente. Tous ces symptômes s'aggravent rapidement ; les yeux prennent une expression d'égarement ; la marche est indécise ; l'homme vacille et tombe enfin pour ne plus se relever. La peau des mains se fendille alors et laisse souvent couler 60 à 100 grammes de sang. Quoique le malade conserve sa connaissance, il paraît en proie à l'ivresse. Son corps est comme une masse inerte qui retombe aussitôt qu'on la relève."

The British troops in the Crimea suffered from two distinct forms of the lesion : one, a frost-bite pure and simple, induced in healthy subjects by low temperature, and affecting the parts of the body most exposed to the influence of cold ; the other, an insidious form of gangrene induced and aggravated by privation, insufficient shelter, clothing, and alimentation, affecting by preference the lower extremities, and noticed not only in those exposed to the influences of the weather, but also among invalids comparatively comfortable in hospital, and at a somewhat elevated temperature ; this latter form, being more strictly analogous to, or identical in type with, the gangrene sometimes consecutive with low forms of fever, hardly comes within the scope of this paper. The latter variety was more prevalent during the first winter of the siege, and, owing to the constitutional complications, was attended with a very great mortality, while the genuine frost-bite was an incident of the second winter, with death resulting almost as an exception.

"The total number of cases¹ noted in the returns is 2,398, and of these, 1,924 occurred in the first winter, and 474 in the second. . . . The total number of deaths returned from this affection was 463, and all occurred, with the exception of six, in connection with the disease as it appeared in the winter of 1854-'55" (the first winter).

The same bad hygienic surroundings and depressing influences, acting during this campaign upon the French army, necessarily produced the same effect; viz., a marked depravation of *physique* and stamina among the men, which modified and complicated the lesions caused by exposure to such a degree, during the first winter, as virtually to inhibit operative interference. The total number of cases reported during the war, according to Serive,² was 5,596, followed by 134 deaths.

Several medico-military writers have mentioned the somewhat curious circumstance that northern races perish sooner from the effects of the cold, than those whom one would suppose from birth and habit likely to be more susceptible to such a depressing agent. Thus Meyseray³ remarked that the French suffered more in the Alps than the Spaniards. According to Larrey,⁴ the natives of the southern parts of Europe, Italians, Spaniards, and Portuguese, endured the cold better than Hollanders, Hanoverians, and other German races; while the Russians suffered more in proportion than the French; and Boudin⁵ states that in Madrid, in 1826-'27, the cold was borne better by the Spaniards than by the Swiss troops.

The lesions caused by cold varying in extent and severity according to the time of exposure, degree of temperature, etc., from simple reaction in hyperæsthesia and cutaneous congestion, to sphacelus, several classifications have been proposed and adopted to clearly indicate the usual appearances and probable results, and, as the effects of cold are in great measure

¹ "Medical and Surgical History of British Army in the Crimea" (Blue-book), vol. ii., p. 187.

² "Relation Médico-Chirurgicale de la Campagne d'Orient," pp. 348, 431.

³ "La Médecine d'Armée," quarto, by Boudin, p. 400.

⁴ "Mémoires," etc., tome iv., pp. 111, 125.

⁵ "Statistique Médicales," tome i., p. 401.

similar to the injuries produced by heat, the same classic subdivisions of burns used by Dupuytren has been applied in describing frost-bite, particularly by Baudens.¹

Larrey, who had in the Polish campaign² in 1807 ample opportunities for studying this subject, spoke of the resulting gangrene as either superficial; as affecting the skin and cellular tissue only; or as complete, involving more or less of the whole member.

Erichsen³ makes a broad distinction between what may be tersely called "suspension of vitality" and "destruction of vitality."

The scale of Legouest⁴ is composed of five degrees: 1. That condition of the parts commonly known as chilblain. 2. The same with phlyctæna superadded. 3. Superficial eschars. 4. Partial sloughing, affecting not only the integument, but also the muscular tissue to a variable degree. 5. Complete gangrene.

The simple classification of Billroth⁵ is in many respects preferable to any of the preceding ones; he divides frost-bite into three varieties: "The first of these is characterized by redness of the skin, the second by formation of vesicles, the third by eschars."

The gangrene observed in the worst cases affects two forms, one, a mummification analogous to senile gangrene, the other a moist humid variety; and though, as Rindfleisch⁶ observes, "the distinction is based rather on the clinical character and coarser features of the process than on its finer anatomy," yet the difference has been made by many writers, and is par-

¹ "La Guerre de Crimée," Paris, 1858, p. 139.

² The suffering in this campaign must have been frightful, for, besides the testimony of Larrey, Thiers, in a note to the account of the battle of Eylau, in stating the Russian loss, remarked that "Both, a German, says that they carried to Königsberg 14,900 wounded, who *almost all died of the cold*" (italics mine).—"History of the Consulate and Empire," translated by Forbes, vol. vii., p. 215. London, 1847.)

³ "Science and Art of Surgery," vol. i., p. 198, sixth edition. London, 1872.

⁴ "Traité de Chirurgie de Armée," p. 798.

⁵ "Surgical Pathology," translated by Hackley, p. 249.

⁶ "Pathological Histology," vol. i., p. 4, New Sydenham Society, 1872.

ticularly well given by M. Haspel:¹ “Les tissus frappés se montraient roides, froids, insensibles avec une teinte blanchâtre ou noirâtre, desséchés, ridés, flétris et comme momifiés, sans odeur, et avaient acquis une dureté considérable; par la percussion ils donnaient un bruit sec comme si l’on frappait sur du bois. . . . Chez plusieurs les pieds enflaient, la face dorsale se couvrait de phlyctènes qui se remplissaient de sérosité jaunâtre ou roussâtre, et devenaient bientôt gangréneuses. Dans quelques cas les pieds énormément gonflés par l’œdème, imprégnés de sérosité et pour ainsi dire macérés dans ce liquide tombaient en larges lambeaux presque sans réaction inflammatoire, et exhalaient une odeur putride insupportable.”

There is a difference of opinion in these cases, as to whether amputations should be resorted to as speedily as possible upon the indication of a line of demarcation, or whether the separation should be left as far as practicable to the unaided efforts of Nature. In the Crimean War, as before remarked, both English and French surgeons deprecated all operative measures because the local injuries were complicated with a peculiar cachexia; indeed, according to Mr. Howard,² “the mere separation of almost dead bone gave rise to the most disproportionate constitutional disturbances;” and McLeod³ remarked the same effect produced by the same apparently insufficient cause.

But, other things being equal, I should from my own experience, and I am glad to find this view sustained by such distinguished authorities as Legouest and Billroth, be in favor of operating at as early a day as practicable, because the tendency to death by pyæmia⁴ in these cases is very marked; the time required for unaided or only partially aided separation is insufferably tedious; the stumps made in this manner are badly shaped, painful, and almost useless; and, also by delaying the inevitable operation, the healthy tissues are apt

¹ *Gazette Médicale de Paris*, 1855, p. 487. See also Boudin.

² “Medical and Surgical History of the British Army,” vol. ii., p. 191.

³ “Surgery of the Crimean War,” p. 173.

⁴ For instructive examples, see “Medical and Surgical History of the British Army,” p. 191; Billroth’s “Surgical Pathology,” p. 252; and “Surgical Cases in U. S. Army,” Case 494, p. 167.

to become engorged and unsound, with the additional complication of extensive necrosis of bone.

From quite a large number of cases in my note-book, I select the following as the most important, valuable, and interesting :

CASE I. Double Amputation for Frost-bite ; Recovery.—Henry Church, American, aged twenty-nine years, private 7th U. S. Infantry, admitted to post-hospital, Fort Shaw, M. T., November 26, 1871, for frost-bite of both hands and feet, received November 24, 1871.

The fingers were covered with vesicles, with also a few superficial sloughs; the feet were irretrievably injured; the toes, metatarsus, heels, and both sides of each foot, were black and insensible; the integument on each tarsus was of a dark cherry-red, and insensible.

General condition unfavorable—a good deal of shock with mental depression existing; pulse only 96, but very weak; complains of great pain in hands and ankles.

Feet and affected fingers painted with tincture of iodine, and an application made twice daily of carbolic liniment (carbolic acid 1 part, to ol. olive 20 parts); nourishing diet, anodynes, and stimulants as required.

28th.—Appetite improving; feels better, but very weak.

December 2d.—General condition slowly becoming more unfavorable; restless nights, great pain, hectic fever, pulse 120. Dr. Winne amputated both legs three inches above the malleoli by anterior skin-flaps, transfixing and making posterior flaps. The arteries of first limb amputated were secured, then second amputation performed, vessels tied, and both stumps dressed.

Pulse, after first amputation, rose to 132; after second operation, to 144.

F $\frac{5}{8}$ viij sulph. ether used as anæsthetic; ten silk ligatures applied. Reacted well in the evening: pulse 100.

7th.—Appetite and general condition good, stumps healing rapidly. Fifteenth day after operations, right stump nearly closed; left stump open at inner angle.

19th.—Pulse 84; right stump entirely closed; left stump closing rapidly at open angle.

29th.—Patient well; stumps not even abnormally sensitive.

Left the post May, 1872, on the opening of navigation on the Upper Missouri.

CASE II. Multiple Amputations for Frost-bite ; Recovery.—Joseph Peirson, Irish, aged twenty-five years, sergeant 7th U. S. Infantry, admitted to post-hospital, Fort Shaw, M. T., November 26, 1871, for frost-bite of both hands and feet, received November 24, 1871.

I have been informed that this soldier succumbed so completely to the intense cold as to fall unconscious on the snow: brought in on horseback to

the ranch, where he remained until transferred to hospital, nearly twelve hours elapsed before he recovered sufficiently to recognize the persons around him, or to appreciate his condition.

When admitted to hospital, his condition was very unfavorable; pulse, at radial artery, barely perceptible; at femoral artery, 120; feeble and weak.

Right foot—toes and anterior third of metatarsus black and insensible, large superficial eschars on heel; left foot—all toes, whole dorsal surface of metatarsus, entire sole extending well up on posterior surface of heel, black and insensible. The thumbs and all the fingers of both hands strongly flexed in the palms; on right hand all fingers (except the index to second phalanx) black and insensible, with large vesicles on metacarpus; on left hand, all fingers to articulation, with metacarpus, and second phalanx of thumb, black, insensible, with vesicles on metacarpus.

Vesicles punctured, affected parts painted with tr. iodin., and carbolic liniment applied twice daily.

28th.—Pulse 112; somewhat stronger.

29th.—Slept well under the influence of morphine; moderate degree of fever.

30th.—Reacting well; pulse 100; appetite improving.

December 1st.—Feels better; pulse 96; is taking the most nourishing diet that can be procured, with, of course, large quantities of stimulants.

6th.—Pulse, more accelerated, 108.

During the next three days, the pulse was 108, appetite fair, line of demarcation fully indicated on fingers, while the feet assumed a mummified appearance, gradually shriveling, with pain in the healthy tissues.

10th to 13th.—Pulse constantly 120, and operative interference could no longer be postponed.

14th.—Dr. Winne amputated the left leg three inches above the malleoli, and, the arteries having been secured, the right foot was amputated through metatarsus by dorsal and plantar flaps; the arteries were then tied and both stumps dressed. Operations upon hands postponed.

F $\frac{3}{4}$ v sulph. ether given as anæsthetic. The pulse, immediately before operation, was 132; when coming under the influence of the anæsthetic, 144; when first amputation done, 136; after completion of second amputation, 136; falling to 116 during the first half-hour after operations, and then gradually rising to 128.

Patient made an excellent recovery, stumps healing rapidly and well: and, on March 11th, Dr. Winne amputated the index-finger at articulation of first and second phalanges, and the other three fingers on right hand at metacarpal articulation, by dorsal and palmar flaps. On the left hand, immediately after, the thumb was amputated through first phalanx, and the four fingers at metacarpal articulations, removing also, on account of necrosed bone, the heads and portions of the shafts of the metacarpal bones.

The patient bore the operation well, passed a comfortable night, and the wounds healed by granulation.

This patient was transferred to Old Soldiers' Home, Washington, on the opening of navigation on the Missouri, May, 1872.

CASE III. *Double Amputation for Frost-bite; Recovery.*—J. H., American, aged thirty years, fur-trader, admitted to post-hospital, Fort Shaw, M. T., January 16, 1872, for frost-bite of both feet. He stated that on December 29, 1871, he was lost in a snow-storm near the Teton River, and remained exposed without either food or shelter until January 2d, when he was rescued and brought to Fort Benton, and thence transferred to Fort Shaw.

Patient had a slough upon the tip of the nose, upon right cheek, and upon both ears. Left foot—whole anterior part, involving the entire metatarsus, gangrenous; enormous sloughs upon heel and sides of foot, extending to upper part of tarsus; large abscess in leg, which was tinged with a dark, erysipelatous flush. Right foot—metatarsus, gangrenous to tarso-metatarsal articulation; slough involving entire sole of foot and heel, exposing the calcis. Patient exhausted by fatigue and pain; pulse 130; no appetite; milk-punch and anodynes given. Affected parts painted with carbolic liniment (carbolic acid 1 part, to 20 parts of ol. olive) twice daily.

January 19th.—Tr. ferri chlor., \mathfrak{m} xxx, three times daily, with food, stimulants, and morphine; pulse 130.

20th.—Pulse 120; brought into the operating-room; but, as the patient's complexion was of a peculiar waxy hue, and as his pulse rose to 140 and feeble, it was deemed better to wait twenty-four hours.

21st.—Dr. Winne amputated both legs in their lower thirds by anterior skin-flaps, transfixing, and then making posterior flaps; the arteries of first limb amputated were secured, then the second limb removed, the vessels tied, and both stumps dressed. Eight silk ligatures, with the usual number of sutures, were applied; all carbolized after the method of Mr. Lister.¹

F $\frac{5}{2}$ x sulph. ether given as anæsthetic. The pulse, when first amputation was done, was 192; falling, after second operation, to 164; and, during first half-hour, after removal from the table, to 156; in evening, 130.

22d.—Slept at intervals during the night; breakfasted on milk and eggs; complains of no pain; pulse 120.

24th.—Pulse 116; slept well; appetite improving.

26th.—Pulse 108; doing well in every respect.

The ligatures came away promptly, but suppuration was profuse, and the process of healing protracted; however, under the free use of stimulants and tonics, the man's general condition improved rapidly; in February he was sitting up in bed, and in March was up in a chair. Two small spicula of bone were detached from the spine of the tibia, but in March both stumps were soundly and permanently healed.

The man left the hospital in May, 1872, and was seen by the operator in March, 1873, walking very well with Palmer's patent legs.

¹ "New Sydenham Society Retrospect for 1869 and 1870," p. 194.

CASE IV. *Double Amputation for Frost-bite; Death.*—J. R., mulatto, aged thirty years, admitted to post-hospital, Fort Shaw, M. T., January 16, 1872, for frost-bite of both hands and feet.

He stated that he had both hands frozen November 26, 1871, and, on January 1, 1872, while coming in on foot to the Marias River, had both feet frozen, and was left in the snow by his companion, who went to seek assistance for him; he remained in this condition, exposed without food or shelter for four days, when he was found, and brought in to a trading-post on the Marias River; as soon as practicable, he was carried to Fort Benton on the Upper Missouri, and thence transferred to Fort Shaw, M. T.

When admitted, he was quite exhausted from hardship and suffering; complains of intense pain; pulse 130. Milk-punch, beef-tea, and morphine given.

On removing the dressings, both feet were found to be gangrenous; on the right foot the line of demarcation extended entirely around the foot, immediately below the malleoli. On left foot, the line of demarcation was also just below the ankle, leaving an irregularly-shaped piece of healthy tissue on the centre of the tarsus. On right hand: thumb uninjured, ungual phalanx of index and ungual and half of second phalanx of middle finger gangrenous, ring and little fingers naturally separated at articulations of first and second phalanges. On left hand: the ungual phalanx of thumb naturally separated; index-finger uninjured; middle and ring fingers to articulations of first phalanges, with tip of little finger, gangrenous.

The affected parts were painted twice daily with carbolic liniment, and carefully bandaged.

January 18th.—Pulse 112; slept quite well; appetite fair.

22d.—Dr. Winne amputated both legs in their lower thirds, by anterior skin-flaps, transfixing, and then making posterior flaps; the arteries of first limb amputated were secured, then the other limb was immediately amputated, vessels secured, and both stumps dressed.

Pulse, when coming under the influence of anæsthetic, 164; when first amputation completed, 148; when second operation done, 136; falling, during the first hour after amputation, to 120.

F $\frac{3}{4}$ xj sulph. ether used; carbolized ligatures and sutures applied.

23d.—Rested well during the night; pulse 96.

24th.—No appetite; complains of intense pain in stumps, shifting from one to the other.

27th.—General condition unfavorable; profuse fetid discharges from both stumps; occasional delirium; has been taking milk-punch, carb. ammoniæ, and morphine.

February 1st.—No improvement; urine passed voluntarily; sordes upon lips and teeth; slight subsultus tendinum.

2d.—Well-marked tympanitis; urine drawn off by catheter; several involuntary fecal discharges; ext. cann. Indicæ and brom. potass. substituted for opiate; stimulants, beef-extract, etc., continued.

5th.—Both stumps sloughing.

Patient sank gradually but surely, and died February 15th.

CASE V. *Double Amputation for Frost-bite ; Recovery.*—John C. Collins, American, aged twenty-seven years, private 7th U. S. Infantry, admitted to post-hospital, Fort Shaw, M. T., for frost-bite of both hands and feet, received December 25, 1872.

Hands, with the exception of right index and middle fingers, only slightly affected; both feet unequivocally gangrenous; an irregular line of demarcation being formed at malleoli; the integument of the feet detached, or hanging in shreds.

The general condition of the man being very low when admitted, he was given tonics, stimulants, and anodynes, with local applications of carbolized oil.

January 2d.—An erysipelatous flush appeared on legs, which pit upon pressure.

3d.—Dr. Winne amputated both legs at junction of lower and middle thirds, the patient being under the influence of sulph. ether. Pulse, at commencement of first amputation, 160; when first amputation completed, 168; at termination of second amputation, 152; falling, in evening, to 116.

8th.—The patient has progressed very favorably; has had no pain of any moment; sleeps well under anodynes; slight continuous traumatic fever indicated by thermometer.

17th.—Stumps healing well, but patient's strength failing a little; pulse more rapid, and temperature higher; spts. frumenti, Ξj , given twice daily.

20th.—Condition evidently improved by the increased stimulants.

23d.—Slight diarrhœa, abscess forming high up in left leg near crest of tibia, followed by sharp but ephemeral attack of partial periostitis, which yielded to vigorous applications of tr. iodinii.

30th.—Both stumps healed with the exception of narrow line of cicatrization. Patient sitting up twice daily.

March 23d.—Application made for the transfer of this soldier to Old Soldiers' Home, Washington.

The advanced condition of partial delirium, ending in coma, produced by prolonged and excessive exposure, noticed by many of the arctic voyagers,¹ as well as by Larrey, Labaume, and Shrimpton, was well exemplified in Case II. and in Case VI., though, unfortunately, the latter was rescued too late, his condition being too desperate, when admitted to hospital, to justify any operative measures.

¹ The celebrated case of Dr. Solander, narrated in Captain Cook's voyages, and quoted by Watson (lecture sixth) and others, the incidents related in Captain Parry's second voyage, 1821-'23, and Case 558, "Surgical Cases in the U. S. Army," p. 194, well illustrate this point.

CASE VI.¹ *Death from Frost-bite.*—George W. Depew, American, aged nineteen years, private 20th U. S. Infantry. Left camp to hunt, March 6, 1870, and, having lost his way, remained exposed for twenty-four hours without an overcoat, the thermometer during period of exposure indicating $+10^{\circ}$. When found, he was lying unconscious in the snow, without either shoes or stockings, which he had taken off, and which were found near him. Admitted to post-hospital, Fort Ripley, Minnesota, March 7th. Unconscious; pulse imperceptible at wrists; respiration much accelerated, and groaning; both legs discolored; feet solidly frozen to insteps. Patient placed in cold room; sinapisms applied to spine, epigastric and præcordial regions; limbs rubbed with dry snow. Patient gradually regained consciousness, and brandy with carb. ammonia given in small quantities.

March 8th.—Patient complains of pain in right chest; physical signs of pleuro-pneumonia present; pulse still imperceptible at wrists; femoral artery 140; respiration 70; legs light purple, insensible; feet mottled; small, superficial sloughs on arms, and over the patellas and elbows; wine-
 whey, extract of beef, etc., given in small quantities frequently.

9th and 10th.—Vomiting almost incessantly.

13th.—Whole right lung hepatized; profuse pneumonic expectoration; slight delirium; limbs gangrenous.

20th.—Died this morning.

“As,” according to Casper,² “death from cold is, next to death from starvation, the rarest of all the kinds of violent death which come before the medical jurist,” professional literature necessarily affords but scanty information relative to the *post-mortem* appearances of persons dying in this way. Beck³ mentions two examinations made by Dr. Kellie; in these cases, “the dura mater was congested and suffused, and its sinuses loaded with black blood. The pia mater was tinged and congested. In each case, also, between three and four ounces of serum were found in the ventricles, and at the base of the brain. Not only did the appearances in the head thus correspond in these two individuals (a male and a female), but even the stomach and small intestines were precisely similar. The stomach was of its usual pale color; the small intestines were deeply colored from general and minute injection of their vessels. The liver was congested.” Dr. Kellie knew of “but

¹ Briefly noticed in “Surgical Cases in the U. S. Army,” p. 169.

² “Forensic Medicine,” vol. ii., p. 275, New Sydenham Society, 1862.

³ “Medical Jurisprudence,” vol. ii., p. 49.

one recorded dissection on this subject," and in this "the vessels of the brain were turgid with blood, and in the ventricles was an effusion of serous lymph."

This cerebral congestion, noted by several authors, though a valuable indication, is not an infallible sign; for, to quote Casper again, "hyperæmia in the skull, in the lungs, in the heart, or in the abdominal vessels and large venous trunks, or in all of them together, is of no probative value, since these appearances are all found quite as well marked after many other kinds of death. . . . An opinion can only be given in these cases by considering the whole of the appearances found on dissection, in combination with the concomitant circumstances attendant on the death."

The *post-mortem* appearances produced by prolonged exposure to cold and wet, when combined with nervous exhaustion, and those produced by an excessive dose of alcohol, are occasionally strikingly similar, though in cases of death from alcoholic poisoning there are usually additional pathological appearances.¹

In the following and concluding case, the most tenable hypothesis deducible from the *post-mortem* appearances, from the man's previous history, and from the circumstances of the case—the victim having undergone great fatigue and hardship—was, that exposure to cold and wet snow had been sufficient to cause death.

Autopsy performed upon the Body of G. T.—Body well nourished; *rigor mortis* well marked; a good deal of hypostatic congestion; pupils of both eyes dilated; large blister upon the sole of the foot; one small blister upon plantar surface of great-toe of left foot; both caused by walking.

Cranium: scalp and pericranium normal; dura mater engorged with black blood; about two ounces of serous effusion upon surface of brain; cerebrum congested and softened, dotted with punctiform extravasations; cerebellum congested.

Thoracic cavity: pleural surfaces non-adherent; no effusion; upper lobes of both lungs congested; lower lobes in state of red hepatization; slight effusion in pericardium; heart contracted, weight eleven and a half ounces; valves healthy; several fibrinous clots, or false polypi, probably formed just prior to death.

¹ See also Taylor, "Medical Jurisprudence."

Abdominal cavity: omentum and mesentery injected to a moderate degree; stomach rather small, empty, and perfectly healthy; intestinal canal empty and healthy; feces in lower bowel; kidneys and spleen normal in weight and appearance; liver forty-one ounces in weight; little *post-mortem* coloration from gall-bladder, with hypostatic congestion in inferior portion; bladder contained f 3jss of healthy urine.

ART. II.—*Retention of Urine.* By ALEXANDER W. STEIN, M. D., Attending-Surgeon to Charity Hospital, Professor of Visceral Anatomy and Physiology in the New York College of Dentistry, etc.

FEW affections present themselves to the surgeon which are more distressing to the patient than retention of urine, not only because of the pain and anxiety which it occasions, but because in the majority of instances it is associated with the consciousness that it depends upon an incurable and progressive disease, whose tendency is to produce, in inevitable sequence, atony and sacculation of the bladder, distention of the ureters, and invasion of the secreting structure of the kidneys, unless relief is afforded. But, while it is a grave affection, there is no disease, in itself incurable, which as a rule responds more uniformly to judicious management.

Some discrepancy of opinion prevails relative to the best method of dealing with these cases, but we propose to lay down those points in the treatment of retention which experience has fairly established as the most judicious and satisfactory.

Of the many real and some imaginary causes of retention mentioned by surgical writers, those depending upon organic stricture and senile hypertrophy of the prostate are by far the most frequent, and are especially deserving our consideration.

Spasmodic stricture, an expression common in surgical literature, has often found a place in the etiology of retention. Yet we question whether spasm of the urethral muscles, apart from pathological changes in the sub-mucous tissue, is ever sufficient to prevent the exit of urine, or is ever capable of arresting the passage of a full-sized catheter into the bladder. At least, such a condition, though often thought to exist, has never been satisfactorily demonstrated.

As to the so-called inflammatory stricture, it is no more worthy the name stricture than is hypertrophy of the prostate—both conditions more or less obstruct the canal, but do not contract or constrict it.

But that a urethra whose calibre is already encroached upon by an organic stricture may by free indulgence in spirituous drinks, exposure to cold, etc., have superadded to it congestion or spasm or both, to an extent sufficient to almost occlude the canal and produce retention, is a fact which every surgeon has verified in his experience. A stricture, which at one time is impermeable to the smallest filiform instrument, will, under the influence of an anæsthetic, or after a few days of rest, warm baths, opium, aperients, etc., admit No. 4, 5, or 6. We call to mind an instance which occurred at Charity Hospital a year or two ago, which is a striking illustration of the fact that spasm may be a potent factor in producing retention when narrowing already exists. Frequent and ineffectual attempts at catheterization had been made by skillful surgeons and experts to relieve an over-distended bladder. Aspiration not having been practised at that time, it was decided to perform external perineal urethrotomy. The patient was anæsthetized, put in position, and the staff introduced; the operator was about to make his incision, when, to the great astonishment of all present, the instrument passed into the bladder with the utmost facility. A catheter of larger size was immediately substituted and introduced with equal facility, and the bladder emptied. This is but one of many instances which might be cited in evidence of the fact that the difficult operation of external perineal urethrotomy without a guide is sometimes undertaken unnecessarily. The more skillful the surgeon, the more he will indorse the axiom of Prof. Syme, that, "if urine passes out, instruments may always, through care and perseverance, be gotten beyond the contraction."

But few cases will not yield to the gentle and persevering use of the delicate flexible bougie; at least not until these have been faithfully tried, and the treatment by aspiration, warm baths, opium, etc., proved unsuccessful, should perineal

section be thought of, unless, of course, special indications for the operation exist.

There are two kinds of filiform instruments employed for the relief of retention depending upon narrow strictures; the gum-elastic (French and English) and whalebone. The objection, sometimes urged against the former, is that it doubles itself in front of the obstruction, and "the point appears at the meatus when it was supposed to have passed into the bladder." We think this accident does not often occur in the hands of those accustomed to manipulating delicate flexible instruments. Although the great flexibility of the gum filiform instruments is in some instances a disadvantage, they will, by virtue of this property, sometimes follow the sinuous course of a distorted canal more readily than whalebone. Having gone beyond the contraction, they are less apt to engage in the enlarged lacunæ which so often exist behind old strictures, and, lastly, they serve as the best and safest guides to the bladder for such other instruments as we may subsequently wish to employ (i. e., catheter, dilator, etc.).

As regards the utility of the probe-pointed whalebone instruments, we believe them to be especially serviceable in indurated strictures of the pensile portion of the urethra, where their value as searchers for the orifice of some forms of stricture is often greatly enhanced by their bent or twisted extremities. In difficult cases the method adopted by Desormeaux is often useful. Several of these instruments are introduced side by side, so as to cover the face of the obstruction with points, or, if one or more enter a false passage, they are allowed to remain *in situ*, and others introduced until the natural passage is found and the bladder reached. The introduction of filiform instruments should always be preceded by filling the urethra with oil.

When the stricture is within two or three inches from the meatus and is complicated with numerous or large false passages, the endoscopic tube, with the aid of bright light, will sometimes enable the operator to guide the whalebone through the orifice of the contraction.

We have just adverted to the fact that the urethra is not only greatly dilated behind the stricture, but the lacunæ, pro-

static and ejaculatory ducts on the floor of the canal are often very much enlarged, and readily entangle the point of a fine bougie, and thus endanger the formation of a very troublesome false passage, one even worse than if it were situated in front of the stricture. It is not always easy to determine when the instrument has engaged in one of these openings, for in narrow strictures the bougie is grasped so tightly that its manipulation is often rendered difficult. Great gentleness is, therefore, required, even after the obstruction has been fairly passed. Very little force is sufficient to thrust an instrument—especially if inflexible—through the walls of the urethra. If the instrument has gone seven or eight inches and has become arrested, the finger in the rectum will ascertain its precise situation. If it has engaged in a false passage, it should be partially withdrawn, and, with a little pressure upon the point of the instrument, slowly reintroduced. This to-and-fro motion is gently made until the bougie effects a passage into the bladder. Sometimes catheterization is facilitated by directing the patient to make an effort at micturition while the instrument is being passed onward into the bladder. This manœuvre possesses the further advantage that, separating the walls of the urethra, the chances of making a false passage behind the stricture are diminished.

When the instrument enters a false passage, it may be determined by a characteristic grating feel imparted to the touch, and, if the instrument is metallic, its point becomes more or less fixed in position. But the absence of these signs is no evidence that the instrument has not deviated from the natural channel. Sometimes the grating feel is entirely absent, and, although the instrument may have pursued an abnormal course on its way to the bladder, if it has reached that viscus, it will be perfectly mobile. In brief, we venture to affirm that, however skilled the surgeon, he may, under certain circumstances, follow the course of a *previously-existing* false passage into the bladder and be ignorant of the fact. This statement would become one of significance, if it could be demonstrated that divulsion or incision of a stricture, under such circumstances, is more frequently followed by shock than when the instrument has followed the natural channel through-

out. In the two instances of death from shock after divulsion, in which we had an opportunity of witnessing the autopsy, the divulsor had certainly tunneled the urethra.

Often the mere attempt to pass the obstruction—especially if the point of the instrument has engaged the stricture—will afford relief—the withdrawal of the instrument being followed by a flow of urine. But, as a rule, this is insufficient, and it is necessary to pass a catheter. To this end the flexible gum filiform instruments should be provided with screw-tips so that they may be attached to a small silver catheter (Fig. *A*), and thus serve as a guide for that instrument to the bladder.

If the guide employed is whalebone, the tunneled catheter, devised, we believe, by Dr. Gouley, is adapted (Fig. *B*). “It is three millimetres in diameter, nearly corresponding to No. 3 of the English scale, and it is conical, its point being two millimetres in diameter, about equal to No. 1 of the same scale. A groove on its convex side extends a distance of four inches, and is bridged over in its last twelfth of an inch, so as to form a canal for the reception of the whalebone guide” (Gouley). We believe that the passage of the catheter is more facile when the canal through which the guide passes is from one to one and a half inch in length (as after Mr. Teevan’s modification, London *Lancet*, July 5, 1873), instead of one-twelfth or one-eighth of an inch, and it seems reasonable to assume that the danger of breaking off the end of the whalebone as the catheter is passed over the guide is also thereby diminished. For the fact must not be ignored that this accident has already occurred several times in experienced hands.

If the strictured canal has not deviated from its normal course (i. e., not tortuous), the small flexible instruments may occasionally be dispensed with, and Thompson’s probe-pointed silver catheter used to advantage. But small metallic instruments should always be manipulated “with a light hand and a lively sense of a false passage.” They are dangerous unless connected to a filiform bougie already introduced as a guide. It is unnecessary to cite instances in proof of this statement. Let those who doubt, visit any museum in which many specimens of stricture have been preserved, and the mischief for which small metallic instruments are responsible will become too obvious.

If the bladder has been greatly distended for some time, it is imprudent to remove all the urine at once. Several deaths have been reported as the result of too hasty evacuation of the entire contents of a highly-distended bladder. It is best to withdraw a portion at a time, thus affording time for the bladder to gradually regain its normal condition of contraction.

In young persons the lowest part of the bladder is the neck, but as age advances the bladder gradually sinks into the pelvis, so that in aged persons—especially if the prostate is enlarged—the inferior fundus, or *bas fond*, is often dilated into a pouch, constituting a permanent reservoir for stale ammoniacal urine. In such cases we have employed with very satisfactory results a catheter having a short beak or curve whose extremity can be swept over the floor of the bladder behind the prostate (Fig. 1). Its opening at the extreme point

FIG. 1.



allows aspiration to be effected, and the bladder is thus completely emptied. Before Dieulafoy's aspirator became known, we resorted to this expedient in the first instance with a simple India-rubber bulb detached from a Davidson's syringe (*vide Medical Record*, June 15, 1872), and subsequently with an ordinary exhausting pump. Now we have the more convenient means by Dieulafoy's or Potain's aspirators. It is needless to say that this procedure is equally applicable to all cases of impaired contractility of the bladder, whether that depends upon atony of its muscular coat from over-stretching, or upon paralysis, the result of disease in the nervous centres. Many of these cases are subjects of cystitis, and the means

and remedies, which are otherwise unavailing in this affection, are found all-sufficient if, before instituting local treatment, the importance of thoroughly removing the source of irritation is appreciated.

When an instrument has with great difficulty passed a stricture, it is a safe rule to leave it in position :

1. Because, if removed, it may subsequently be impossible to reintroduce it, and consequently we may be obliged to perform external urethrotomy without a guide, a difficult operation, and one which may be contraindicated by the condition of the patient.

2. The filiform guide in the urethra affords the best means for the subsequent treatment of the stricture. For example: should the general condition of the patient favor an operation, Maisonneuve's urethrotome may be attached and the stricture divided. If it is a case for divulsion, the divulsor is attached ; or, if external urethrotomy is indicated, the grooved staff is screwed to the filiform guide and external division rendered simple. Thus the filiform guides are made to fit either catheter, urethrotome, divulsor, or grooved staff. If, on the other hand, the patient has diabetic or albuminous urine, a bad constitution, a nervous, irritable temperament, we may resort to the milder method by gradual dilatation, or, if this is not feasible, the continuous plan may be adopted.

A careful examination into the general condition of the patient and the state of his urinary organs is imperative in determining the character and the proper time for an operation. The examination of the urine should be regarded as a *sine qua non* in the treatment of all urethral strictures. Not until such examination has been made can we judiciously decide upon the proper treatment to be adopted in each case, or can we duly estimate the danger that might, in some instances, accrue from too active interference. "He who is a physician only, will constantly overlook calculus and stricture, to the great detriment of the patient; while the mere surgical handcraftsman will treat mechanically many a case which can only be injured by his manipulations" (Holmes's "Surgery"). In making an examination it is not only important to recognize the existence but also the extent of renal disease.

The first is revealed by the presence of albumen, the latter is determined by the relative quantity of the normal constituents of the urine present, which indicates the eliminating power or functional activity of the kidney still left.

We must constantly keep in view the serious consequences which inevitably ensue from prolonged over-distention of the bladder, not only endangering rupture of the urethra and extravasation of urine, but also the injurious effect that continued pressure will exert on the structure and function of the renal organs. Structural change of the kidneys is especially to be apprehended in those who have suffered with repeated attacks of retention.

Accumulation of urine in the bladder, in consequence of the gradually-increasing obstruction to its outflow, takes place by degrees and often imperceptibly. While the desire to void urine becomes more frequent, less urine is passed at each effort. Thus distention of the viscus ensues, its muscular coat becomes over-stretched, and loses its contractility. The urgent desire to evacuate the bladder now subsides; the organ becomes as it were an insensible sac, and, having attained its utmost degree of dilatability, dribbling or overflow occurs.

We rarely see two cases of retention which present the same characteristics. Thus in one instance the bladder will be comparatively but slightly distended, and yet the attending symptoms will be more urgent than in one in which the bladder has risen above the umbilicus. Mr. Jonathan Hutchinson mentions a case in which retention insidiously terminated in fatal disease of the kidneys, *without pain or inconvenience* (London *Lancet*, July 4, 1868). Again, in one instance the bladder may expand to a degree endangering extravasation, and not a drop of urine escape *per urethram* (complete retention); while in another over-distention coexists with constant dribbling (incomplete retention). This latter fact should be appreciated, because this condition has not unfrequently been mistaken by surgeons for an inability on the part of the bladder to retain urine (incontinence), instead of recognizing it as an overflow of surplus urine from the over-distended viscus. Another peculiarity may be mentioned, in the fact that, in some cases of *complete* retention, we are enabled to pass an in-

strument of comparatively large size without great difficulty, while in others, in which free *dribbling occurs*, catheterization may be unsuccessful even with the most delicate instrument.

The difference in the character of a stricture as regards its dilatability, resiliency, etc., depends upon the seat and extent of the inflammation which has produced the stricture. Urethritis may result simply in the destruction of the epithelial elements of the mucous membrane, which after a time are entirely reproduced, and no perceptible lesion remains. But a stricture is always the expression of pathological change in the sub-mucous tissue, whether that is confined to the areolar tissue, immediately beneath the mucous membrane, or has involved the trabecular net-work of the corpus spongiosum. If confined to the sub-mucous areolar tissue, the stricture ordinarily yields easily to simple dilatation. If, however, the inflammation has been intense or prolonged, and has involved the muscular trabeculæ of the corpus spongiosum, these strictures are metamorphosed into fibroid tissue; which new element produces a stricture far less amenable to dilatation, and characterized by its obstinacy and resiliency—the latter varying in degree according as the changes have occurred near the mucous membrane, or have extended deeper into the substance of the corpus spongiosum.

Retention of urine will in the natural sequence of events lead to suppression of that secretion. As soon as the bladder becomes distended, the urine accumulates in the ureters, then in the pelvis of the kidneys, and finally in the tubuli uriniferi. Soon the pressure in the uriniferous tubes becomes so great that secretion of urine is more or less arrested, symptoms of suppression manifest themselves, and death frequently terminates the case. When suppression arises from organic disease of the secreting structure of the kidneys, the physical properties and composition of the urine differ from those cases in which the suppression depends simply on an impediment to the outflow of the urine by its excretory channels. In the first instance the urine is high-colored, concentrated, and contains casts. In the other, the urine, being secreted under a high pressure, is pale, watery, and devoid of casts.

Having vainly tried to effect catheterization by means of

the finest instruments, or, if we have reason to apprehend extravasation or that permanent injury to the urinary organs may result, or the age and suffering of the patient demand immediate relief, hypogastric puncture by means of the capillary trocar with pneumatic aspiration must be resorted to. Indeed, this operation is so simple and harmless, and so certain in its results, that it is no longer justifiable to temporize when catheterization is in the least difficult, whether in cases of stricture or hypertrophied prostate. The punctures are so insignificant that no harm is done by making them several times a day, or as often as necessary. As a palliative measure it is of the highest order, because of the well-known fact that the flow of urine through an obstructed urethra often becomes reëstablished in a day or two, if not in a few hours after it has been diverted from its natural channel. A stricture which at one time seems insurmountable, and which causes the patient to run the risk of a serious operation, being relieved of the irritation of the urine passing over it, becomes amenable to the safer and more simple method by dilatation. After aspiration we can frequently penetrate the bladder through the natural passage without delay and with comparative ease, because, the distention being removed, the urethra is placed in a condition favorable to catheterization. For it must be borne in mind—especially when using small, inflexible instruments—that when the bladder fills it rises in the pelvis, and in doing so draws the urethra up with it, puts it upon the stretch, increases its anterior concavity, and therefore increases the difficulty of catheterization and the danger of creating a false passage. The perineal, recto-vesical, sub-pubic, and hypogastric punctures by means of large, curved trocars, have all been in favor, but even under the most auspicious circumstances are of some gravity, and often complicated with unpleasant sequelæ. May we not safely affirm that the capillary hypogastric puncture has superseded all other methods of puncturing the bladder? Dr. Dieulafoy has shown that punctures made with a needle half a millimetre in diameter are entirely innocent in their effects. He has thrust them not only into the bladder, but into joints, the liver, spleen, intestines, lungs, and the meninges, without any con-

secutive accidents. Since the first application of this method to retention (February 26, 1870) by M. L. Labbé, a great number of similarly successful cases have been collected here and abroad. In many the punctures were made several times daily for many successive days, without the least unpleasant effect. The mode of performing aspiration is very simple, and does not exact any special surgical dexterity. The first thing is to be assured of the perfect working order of the aspirator; and, secondly, the permeability of the needle, which, on account of its length and tenuity, is very easily obstructed with dust or rust. No. 1 (half millimetre in diameter, and twelve centimetres in length) is usually preferred on account of its thinness and length; but No. 2 (one millimetre in diameter) may be employed with equal safety. The spot selected for the puncture is one or one and a half inch above the pubes on the median line. The patient being in the recumbent position with hips elevated, and "the aspirator being ready, that is to say, the previous vacuum being made, the needle is introduced sharply at the spot pointed out. Before the needle has penetrated a centimetre into the tissues, that is, as soon as its opening is no longer in contact with the external air, the stop-cock connected with the needle is opened, and the vacuum is thus formed in the needle itself. This needle, carrying the vacuum with it, is slowly, very slowly, pushed in the direction of the bladder, until the urine flowing over the glass index shows that the bladder is pierced. Owing to this proceeding, and having the previous vacuum at our command, we know the precise moment the fluid is reached; at the same time care must be taken to push the needle two centimetres farther, and for this reason, the bladder, in emptying, contracts, and, if the point of the needle is only caught in its walls, it would probably be driven out by the contraction of the organ. . . . The abdomen must not be pressed upon under the pretext of aiding or hastening the issue of the fluid; such a proceeding cannot but be injurious, it is also useless, for the urine is doubly induced to flow by the aspiratory power and by the contraction of the bladder" (Dr. Dieulafoy).

The pain produced is insignificant and very decidedly less

disagreeable than the passage of a bougie along the urethra. The urine cannot escape into the peritoneal cavity from the needle on withdrawing it from the bladder, because it is held by the aspiratory force, and there need be no apprehension of any passing out from the bladder through the punctures, because these are too minute, and because of the contractility of the walls of the viscus.

Léon Labbé reports the *post-mortem* examination of a case under his care which showed the perfect innocuousness of the punctures, even when repeated a great number of times. The external surface of the bladder presented slight ecchymoses, the size of which was not larger than a flea-bite. These little ecchymoses corresponded to each of the punctured points, but it was impossible to detect any traces of the punctures on the internal surface. (Patient died of peritonitis in consequence of a contusion of the abdomen and perinæum.) In the case of Dr. F. Guyon, surgeon to the Hospital Necker, in which the operation was repeated twenty-five times in twelve days, the patient eventually dying from the effects of dysentery, the *post-mortem* examination showed the presence of little blackish spots on the internal surface corresponding to the capillary prickings, but without any infiltration or any loosening of the mucous membrane.

If, however, the stricture is of traumatic origin, or when recent extravasation has occurred, or when the perinæum is hard and indurated from an old abscess or extravasation, external urethrotomy is by universal consent regarded as the only reliable operation. Such cases, even though the strictures are permeable to filiform instruments, are little benefited by the palliative treatment. The old operation of perineal section—which is performed very often even to-day—consists in passing a large instrument down to the obstruction, and opening the urethra upon it. Then, “by dint of cutting, a way is made for the instrument to go from the urethra before the stricture to the urethra behind the stricture” (Thompson). The stricture itself, in the majority of cases, remains untouched. This operation has been greatly improved by Messrs. Arnott and Avery. The patient is prepared, and placed in position, as for the operation of lithotomy. A

grooved staff (which is preferable to a grooved catheter, because less liable to slip from under the knife) is passed down to the stricture, and held firmly and steadily in position by an assistant, who at the same time supports the scrotum. An incision is now carefully made along the raphe of the perinæum, extending from near the scrotum to within half an inch of the anus, involving the skin and connective tissue. This incision should be sufficiently extensive to afford a full view of the deeper parts. A small external wound not only embarrasses the operation, but afterward endangers urinary infiltration; or, if this does not recur, retards the healing process. The incision in the superficial tissues should be larger than in the corpus spongiosum; and that in the corpus spongiosum larger than in the sub-mucous tissue and mucous membrane. The urethra is now opened at about a quarter of an inch above the point of the staff, and the canal exposed to view. Mr. Avery's plan of holding apart the lips of the wound is now generally adopted: "A loop of thread should be passed through each margin of the urethral incision, including the mucous membrane close to the stricture, so as to open out the passage, and dispense with hooks or fingers, which might intercept the view. The loops serve also to guide the eye to the exact spot at which the stricture commences, during any stage of the dissection which it may be necessary subsequently to make." This done, the parts are carefully sponged, the interior of the canal brought into view, and a small grooved, probe-pointed director is made to follow the track of the contracted canal, and the stricture divided thereon by a narrow bistoury.

After the urethra is opened, and the lips of the wound, together with the mucous membrane, are separated, the position of the staff may be reversed, its point turned out through the external opening, and used to draw forward, fix, and steady the urethra, while the director is being guided along its upper wall (Mr. C. G. Wheelhouse).

When it is difficult to distinguish the urethra from a fistulous passage, pressure upon the hypogastric region will—when the bladder is full—sometimes cause the urine to flow through the contracted orifice, and thus indicate the true course of the canal.

It is maintained that, in certain cases, where—in consequence of much thickening and induration of the perinæum from abscess and fistula—it is extremely difficult to follow the course of the urethra from before backward, the urethra may—after the superficial parts have been divided—be opened behind the stricture, a curved probe, or director, passed along the canal forward, to meet the grooved staff which has been introduced from the meatus. This accomplished, the strictured part may be divided either from before backward, or from behind forward. The dilatation which often exists behind old strictures—especially when distended with urine—will afford the operator a valuable guide to the urethra. But, if this pathological landmark does not exist, the operation becomes quite uncertain.

When rupture of the canal has occurred from a fall or blow upon the perinæum, the patient should avoid making efforts at micturition until a full-sized catheter has been introduced, the object being to prevent extravasation. If catheterization is for the time difficult, the retention is relieved by aspiration. If, however, urinary infiltration has already taken place, external perineal urethrotomy should be performed without delay. Transverse wounds of the urethra, the result of blows upon the perinæum, rapidly develop into strictures, and, when formed, are usually tight, resilient, and often very irritable; the most gentle manipulation exciting disagreeable constitutional disturbances. These are the reasons which render traumatic strictures incapable of cure by dilatation, and why external urethrotomy is often the only reliable procedure. Nothing can be gained, therefore, by waiting. Sooner or later a stricture will form at the site of the injury, which will probably necessitate external perineal urethrotomy. If, therefore, extravasation exists, let the fluid escape by the radical operation.

A perineal abscess, in connection with retention, does not necessarily imply ulceration of the urethra and extravasation of urine. These abscesses are often the result of inflammation of structures contiguous to the urethra. If an abscess exists in the perinæum associated with difficult micturition, the sooner it is opened the better. It should always be evac-

uated before instruments are introduced into the urethra, otherwise a urethral communication may be made with the abscess. Furthermore, after the abscess is opened, catheterization will often be unnecessary. We have seen several instances of extra-urethral abscesses, which induced great difficulty in micturition, at once relieved by the evacuation of the pus.

It is a remarkable fact that, in some cases, the urethra will bear with impunity quite rough manipulation, while in others the most gentle instrumental interference is resented by severe constitutional symptoms. Mr. Paget has known death to follow simple sounding for stone, in six cases. Sir Henry Thompson has, on several occasions, observed suppression of urine, rapidly followed by death, to result from the introduction of an instrument larger than the patient was accustomed to. If such results obtain from simple irritation of the urethral mucous membrane without injury to its structure, we can easily account for the frequent occurrence of urethral fever after an operation. The phenomena upon which urethral fever depends is a matter scarcely relevant to the subject at present under consideration, but we wish to lay down a few points in regard to its prevention, which are not sufficiently appreciated :

1. The patient should be prepared for the operation. The advantages derived from rest, hot hip-baths, opium, regulation of bowels, and the administration of mucilaginous drinks to render the urine unirritating for a few days preceding an operation, cannot be over-estimated. If the patient has been suffering the pains of retention for many hours or days, he will run less risk of urethral fever, if absolute relief is afforded him by aspiration for some time before the operation.

2. The first act of micturition following an operation often excites the first unpleasant symptoms. For this reason, the bladder should be emptied before the operation. This is effected by attaching a small silver catheter to the guide, which, having served its purpose, is replaced by the urethrotome or divulsor, and the operation completed. Afterward, the patient should avoid passing water as long as he can without discomfort.

3. Instruments should not be introduced too soon after the

operation; pain and considerable irritation are produced without a corresponding amount of benefit being derived. Instrumentation can safely be deferred until all constitutional symptoms have subsided.

Retention sometimes recurs after the stricture has been cut or divulsed, the muscular fibres of the bladder having become atonied by the previous over-stretching. Under such circumstances we would prefer to empty the bladder by the capillary puncture and aspirator, rather than pass an instrument too soon.

In attempting to relieve retention by catheterization in prostatic enlargement, it is essential to bear in mind that, owing to the various forms which the enlargement may assume, viz., unilateral, bilateral, general, or by special enlargement of the middle lobe, the urethra is encroached upon in different ways, and the canal will be rendered tortuous in various directions. When the enlargement is confined to one of the lateral lobes, the urethra will be deflected to the other side. If both sides are equally enlarged, the prostatic urethra will be deepened and flattened in the vertical direction, but not deflected to either side. If, again, the middle lobe be enlarged, the urethra is lengthened and increased in curvature. Thus, success in catheterization will depend—1. Upon the selection of a proper instrument; and, 2. Upon the patience, gentleness, and lightness of hand, which are exercised. It should be remembered that the design is not to overcome or go *through* the obstruction, but to evade or pass it. A frequent source of failure in relieving retention from prostatic enlargement with the ordinary silver catheter is the fact that the neck of the bladder is often considerably elongated, and the instrument, being of insufficient length, does not reach the viscus. A prostatic catheter should be longer and (if a curved instrument is used) its curvature greater than the ordinary instrument, to enable its point to mount over the projection which almost always is behind the urethra, and which alters the normal curve of this canal by pushing it upward and forward. The over-curved English flexible catheter is accordingly often a most serviceable instrument; being usually of sufficient length, it possesses an advantage over the metallic instrument

in being flexible. By tilting its point over the enlargement with the finger *per rectum*, the passage of the instrument is facilitated.

We shall not consume space in the description of the great variety of prostatic catheters which have from time to time found favor, or in analyzing their relative value. Some of them, no doubt, possess certain advantages adapting them to special cases. But in the majority of instances the French bulbous-pointed, tapering catheter answers every purpose, and is preferable to all metallic or even English flexible instruments. Indeed, the more flexible the instrument the more readily does it follow the course of a tortuous canal and ride over any obstruction which it may encounter, and from whichever side of the urethra it may project.

We have stated that over-distention of the bladder often occurs insidiously and imperceptibly, but retention may occur quite suddenly in those who have never previously had retention, or any considerable difficulty in micturition. A slight degree of over-distention is often sufficient to render the bladder incapable of overcoming the obstruction of an enlarged prostate, and produce retention. We might record instances of prostatic obstruction in which permanent atony of the bladder resulted from once neglecting to attend to the inclination to micturate. Congestion of an enlarged prostate from exposure to cold, free indulgence in spirituous drinks, etc., is also often the cause of sudden retention, in which case aspiration, the hot hip-bath, and opium, will allay the congestion and relieve the tenesmus.

The severity of the symptoms will depend more upon the character than upon the degree of enlargement. While the prostate may attain to a very considerable size (eccentric or peripheral hypertrophy) without causing much if any inconvenience, a very slight enlargement, as when the median portion is affected (centric hypertrophy), is sometimes sufficient to completely obstruct the flow of urine and produce symptoms most distressing.

The following two cases, reported by Mr. Richard Quain, F. R. S. (*Medical Times and Gazette*, May 18 and June 1, 1872), besides being highly instructive, admirably illustrate the fact just mentioned.

CASE I.—*This Case illustrates some Peculiarities in the Evacuation of Urine and in the Passage of a Catheter, which resulted from an Unusual Condition of the Prostate Gland, with a Corresponding Change in the Urethra and the Urinary Bladder.*

MR. M. first suffered retention of urine in consequence of overstaying the desire to evacuate in a journey by railway. He was at that time fifty-eight years of age. It was ten years later that I first saw him. He applied to me to be relieved of an attack of retention. He was suffering extreme distress. From that period and up to his death, thirteen years afterward, this gentleman visited me frequently for the same purpose. He sometimes applied to me at short intervals, but he was once, during my knowledge of him, as long as fifteen months without suffering inconvenience or needing assistance. The disability to pass urine always arose from the same cause—namely, overstaying the inclination to pass it, or overstaying the usual time of evacuation. The visits to me occurred, with very rare exceptions, during the night—most frequently about two or three o'clock in the morning, occasionally as late as six o'clock; very infrequently during the day-time. The common interval between the times of passing water was two hours or two hours and a half. When that time happened to be prolonged in any considerable degree, the inability to evacuate occurred. The delay was easily avoided in the daytime—the waking hours; but at night the insensibility of sound sleep would now and then carry the patient over the proper margin of time. That was the common, if not the invariable, cause of the seizure.

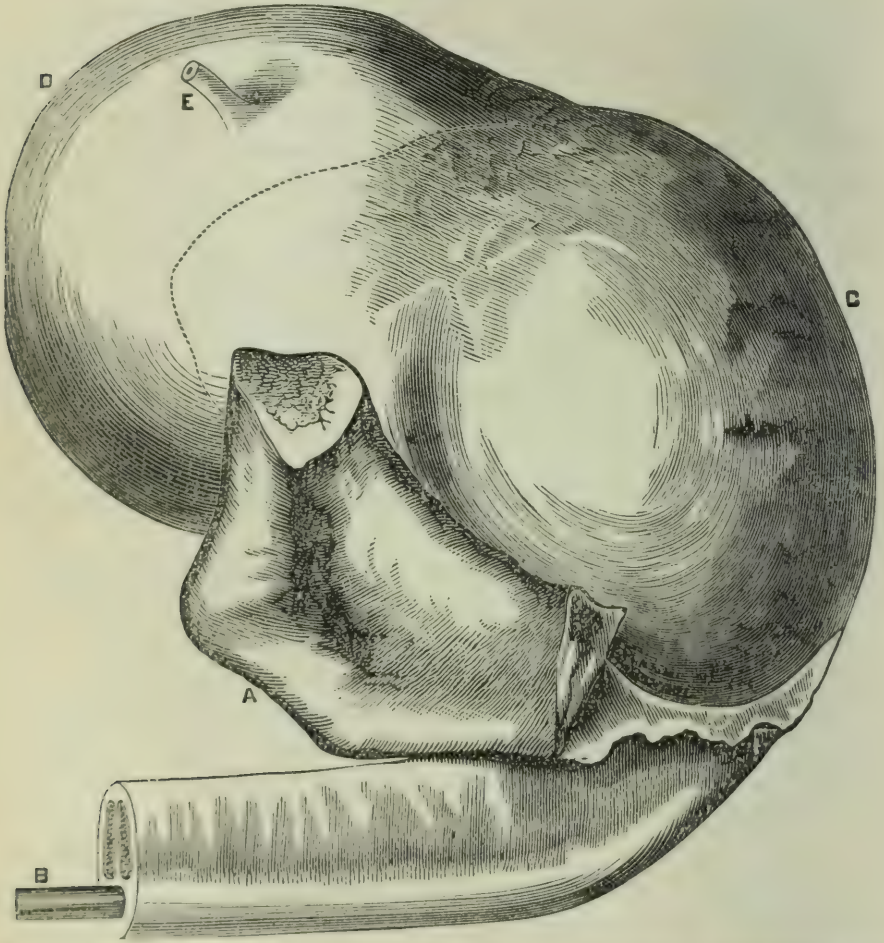
Having, at his first visit to me, noticed a peculiarity in the position of the urinary canal, and perhaps having made a remark about it, I learned that Mr. M. had previously sought the aid of other surgeons. He said that he had suffered much pain and had lost blood whenever the instrument was passed. While the attack of disability to empty the bladder lasted, the suffering of this gentleman was intense. That it was so, was evident from his strong expression of pain, and from his extreme anxiety to obtain relief in the shortest time possible. From apprehension of recurrence of suffering, with the knowledge that it might recur any night, Mr. M., when quite well, was in the habit, during those many years, of making arrangements, often very ingenious, to secure access to relief in the speediest way.

When I first saw Mr. M., I wished him to use a catheter for himself; but he absolutely refused to make a trial, from fear that he must fail, and that he might do mischief on account of a degree of clumsiness of his fingers, which were partially stiffened by slight attacks of rheumatism. He had, besides, from former experience, a fear of any new trial, whether by himself or any one else. At length, however, on an occasion that I proposed to be away from home—farther away and for a longer time than usual—he made the attempt, and he succeeded with little more direction than is required in common cases. Thereafter I saw nothing of this gentleman until he had an attack of general illness. He had passed the eighty-first

year of his age in good health, when he had a severe attack of idiopathic erysipelas. After that illness had passed away, he sank from exhaustion, owing apparently to inability to take food of any kind.

The examination after death, in so far as concerns our purpose, gave the following results: In the place of the urinary bladder, at the fore part of the pelvis was a large mass, for the most part solid, which extended some way above the pubes (Fig. 2). This was, in fact, the urinary blad-

FIG. 2.

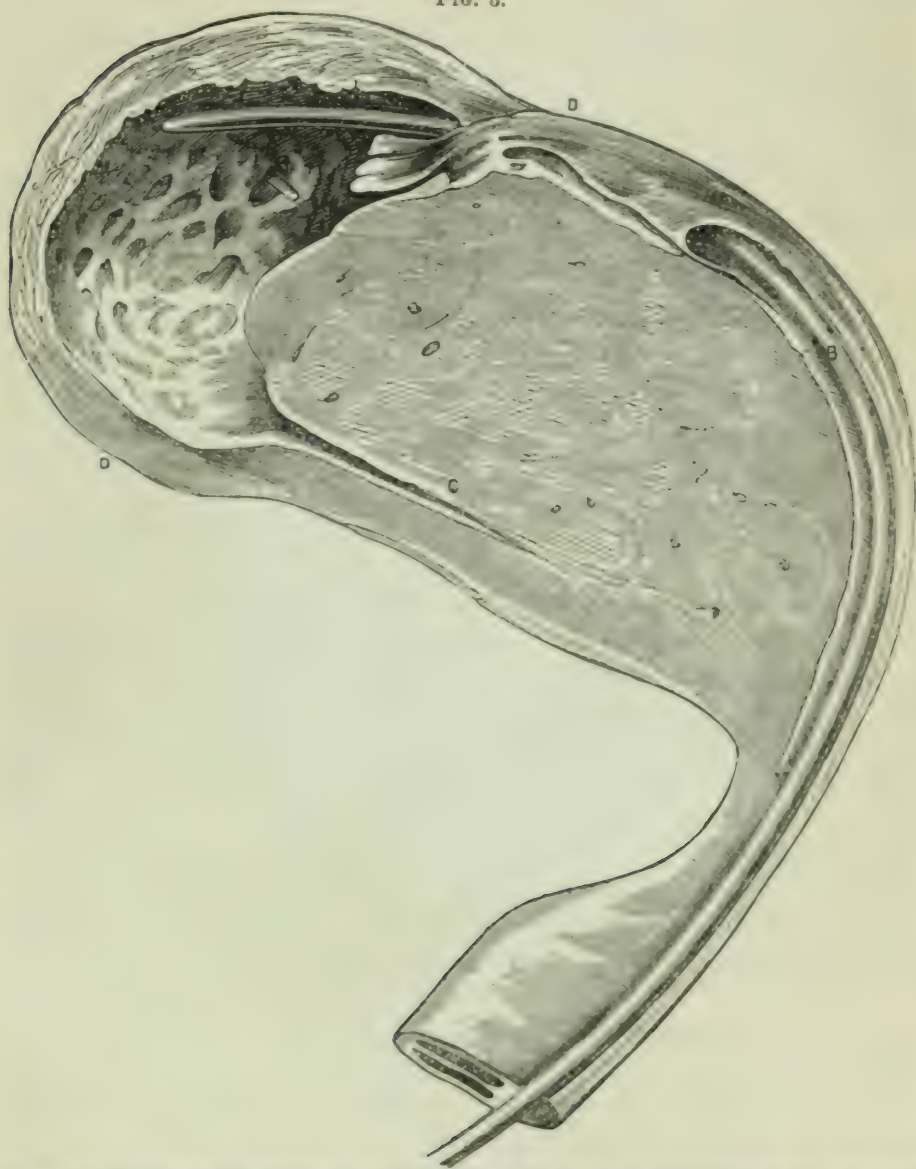


The pubic bones, with the urinary bladder, the prostate, and a portion of the penis, as seen from the left side. A, the symphysis of the pubes; B, bougie in the urethra; C, the back part of the enlarged prostate. None of the gland projects in the form of lateral or posterior lobes. The place of the upper end of the prostatic tumor is represented by a dotted curved line. D, the top of the bladder; E, the left ureter.

der, filled in great part with a firm tumor. The tumor itself was in part above the pubes—in the abdomen, therefore. A section of the whole having been made (Fig. 3), the tumor was found to be the prostate gland, enlarged, in an unusual position—above the urethra instead of below it, as is common. The upper end of the enlarged prostate is seen to be conical (Figs. 2 and 3)—so formed that urine would necessarily glide from it tow-

ard the urethra, unimpeded by the gland, or any part of it. The lower part of the prostate (lateral lobes and the middle one) is represented by a thin layer of glandular substance mixed with muscular fibres. This is, as in the ordinary condition, continuous with the anterior part of the gland.

FIG. 3.



A vertical section in the middle of the parts represented in the preceding figure, the bones omitted. The letters as in Fig. 2. A part of one vesicula seminalis exists in the preparation opposite the lower end of the structure which covers the bougie.

The urinary bladder was free to contain urine only in part. The bladder proper of the case was wholly in the abdomen, or very nearly (Fig. 2). There was no dependent part (fundus) behind the opening into the urethra (Fig. 3), as is usual in the adult, and is especially well marked in advanced age.

The urethra—in which a bougie has been placed by the dissector—continues from the back part of the bladder, instead of being at the fore part of that cavity. From this, the natural position, it was doubtless pressed away during the growth of the anterior tumor. The free course of the canal was not, it may be noticed, impeded by any obstruction, either by the prostate or any other structure.

The points of greatest interest in the foregoing case may be shortly stated as follows: The power to evacuate urine remained entire, except at intervals. All through the long series of years during which Mr. M. was liable to (and at intervals suffered from) retention, the inability to pass urine did not continue beyond the single seizure; insomuch that, after relief once given, the inability did not return except after a certain space of time—several days, or weeks, or even months. On no more than two occasions during thirteen years was it necessary to resort to the use of the catheter a second time—not once a third time—on the same day; and even then the bladder had evacuated its contents spontaneously several times before the return of retention. Thus the recovery was complete each time after the single act of assistance; and so it was to the end.

Again, there was no indication, throughout the whole history of the case, that any urine remained after the spontaneous evacuation. Nor was there an indication that the kidneys or other part of the urinary organs was otherwise than healthy. The general health, too, was unimpaired, except in so far as occasional slight rheumatism was concerned.

The question occurs, Whence arose the delay and difficulty which, according to Mr. M.'s statement, had at first been experienced in the use of the catheter? The answer must, I think, be this: The urethra was not in the usual position. Commonly, in aged men suffering with retention of urine, that canal near its vesical end is raised above or in front of the place natural in previous life; for commonly—indeed, in my experience, almost invariably—the enlargement of the prostate which obstructs or interferes with the freedom of the flow of urine occurs in the part of the gland beneath or behind the urethra—between it and the rectum. Hence the surgeon expects that the point of his instrument, when it approaches the bladder and is arrested in its course onward, should be raised toward the pubes. Every tyro is familiar with the expedients, carefully described in elementary treatises, which help to overcome the impediments arising from the usual cause—viz., the tumors behind the urethra. But, in the case before us, the urethra was not raised or pushed forward. On the contrary, it was behind its usual position—was pressed backward, the enlargement of the prostate being before the canal. The difficulty, then, and delay, and loss of blood stated to have occurred in passing the catheter, arose, I apprehend, from the efforts to find the urethra in the accustomed place of aged persons affected with retention of urine.

CASE II.—Continued Suffering and Extensive Disease of the Urinary Organs, resulting from Difficult and Imperfect Evacuation of Urine.

Mr. R., aged seventy years, whom I saw with Mr. Jakins, told the

story of his malady in a written statement which he prepared for me. A few extracts may be usefully made: "Nearly four years ago, at Scarborough, I drank three or four tumblers a day of the water of a well there, and sometimes kept it too long. A difficulty in passing water came on, and I could not refrain from passing it more than two hours at a time. I underwent (elsewhere) in the same year a course of medical treatment, taking many medicines—the last, steel. From this, as well as from other medicines, I derived no benefit. Then I had hip-baths at 80°. After that time a catheter was passed (once), and a full pint of urine was drawn off. Three years later I went to a hydropathic establishment," the patient continues; "there the steam-bath, packing, and mustard-plasters were used; and I had more than any thing tepid baths, which were occasionally run down to cold. . . . But after three months' persevering I was better."

When I first saw him, Mr. R. stated that for nearly four years he had to get out of bed not less than five times every night in order to pass water; and that in the daytime the intervals between the periods of evacuations have been one hour—sometimes two hours. He complains that "he is slow to begin, and has to make efforts, when, at times, a stream will come."

He expresses himself much weakened and depressed by his long-continued illness and suffering. He appears so, and upon examination he proves to be so. About a pint and a half of urine is passed daily by voluntary effort; "but a good deal" (patient believes) "remains behind each time."

A considerable quantity being found with the catheter to remain after the natural evacuation, it was determined to empty the bladder at short intervals. The patient, after having made a trial or two, in which some blood appeared, declined to pass the instrument again for himself; but he came morning and evening some distance to attain what he had found to be a great relief and comfort. The urine was at first pale and opaque—not offensive—but it afforded evidence of deep organic change of the kidney in the form of abundant casts of tubes. Soon after pus was also found. Under an acute attack—pyelitis—the patient sank, four years after a urinary complaint was first recognized by himself.

The condition of the urinary organs was ascertained to be as follows: Both the kidneys, much diminished in size, shrunk, were leather-like to the feel. The pelves of both and their divisions were largely dilated and thickened, and smeared with pus. The ureters likewise were dilated and thickened. The bladder, unnaturally capacious, was in the recent state partly divided into two nearly equal portions—upper and lower—by a transverse constriction. This appearance is effaced in the preparation. A dependent part behind drops from the fundus deeply below the level of the orifice of the urethra; and that dependent part is further deepened by a projection from the prostate. The muscular fibres, much hypertrophied, project in bundles prominently inward. A sac of considerable size has been formed behind, its orifice being near that of the right ureter. The

bladder is thus, as stated in the catalogue, "fasciculated and sacculated." (See Fig. 4).

The prostate is generally enlarged, but not inmoderately so, with the exception of the middle lobe. From it a semicircular outgrowth projects into the bladder at the vesical orifice of the urethra, which it surrounds (Fig. 4, c and E).

FIG. 4.

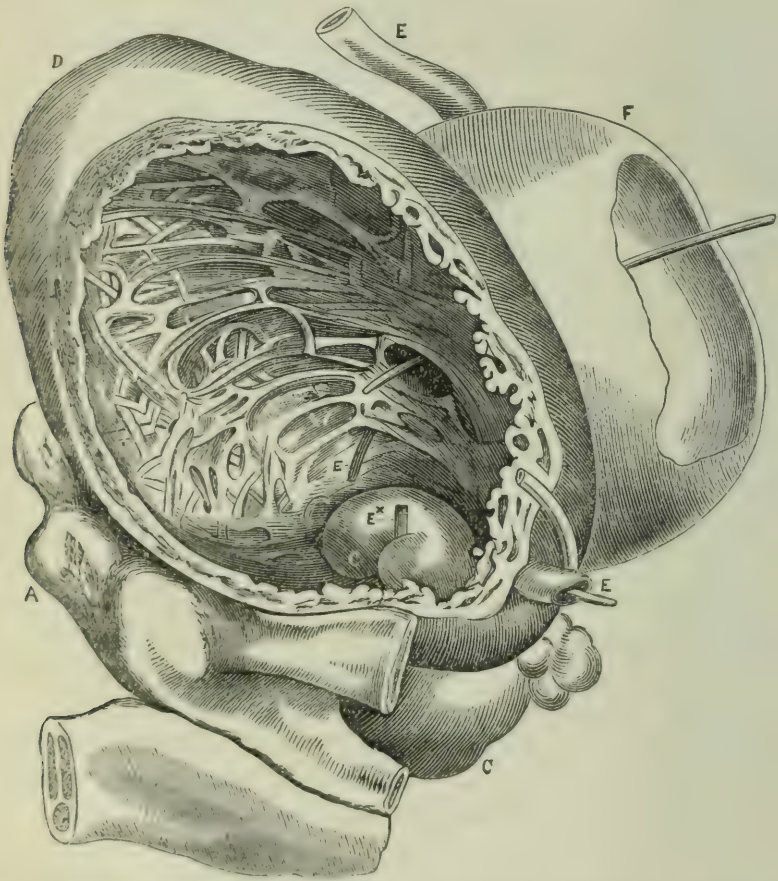


FIG. 4.—A, pubic bones; c, prostate, without and within the bladder; D, urinary bladder; E, ureters; F, sac.

The crescentic outgrowth of the middle lobe was found, by the microscopical observation of Mr. Goodhart, to be "made up of fibrous tissue, condensed connective tissue, and gland-structure apparently healthy, but in small quantity." Mr. Goodhart adds: "I think, also, muscular fibre-cells are present, but the parts are so shriveled that one cannot be certain."

The Figure 4 was drawn by Mr. Ford, from the preparation 1982A in the Museum of the College of Surgeons, to which I presented it soon after removal. The bladder is opened on the left side; the pubic bones are below it, with part of the penis; the sac behind. This is laid open. The enlarged prominent muscular structure of the bladder is represented. The prostate is shown behind the pubes, with a vesicula seminalis at its back

part. The crescentic outgrowth of the middle lobe is seen to encircle a black point $\epsilon \times$, which reaches into the orifice of the urethra. Four points of probes or of whalebone indicate the positions respectively of the ureters, the urethra, and the sac.

In order to arrive at the indications of the treatment of such a case as the foregoing, it is necessary to trace the sequence of events in the series of morbid changes which has been set forth. As regards the urinary bladder: after the continued formation of an increased quantity of urine—the result of large daily draughts of a mineral water—there occurred frequent need for the evacuation, together with difficulty in attaining the object; and, in consequence, forcing efforts to overcome the difficulty supervened. The discharge of urine being effected as far as was possible, there still remained the feeling “that a good deal remained behind.” The obstacle to the free passage of urine was obviously the valvular effect of the outgrowth from the middle lobe of the prostate; and that outgrowth, as it has been already stated, besides obstructing the flow of urine, had another evil effect—it contributed to the detention of urine in the bladder, by deepening its fundus. To the forced action of the bladder the thickened and prominent condition (hypertrophy) of the muscular structure was owing.

With a view to practical conclusions respecting the case of Mr. R. (Case II.), I would now compare or contrast it with that of Mr. M. (Case I.). While the source of all the suffering that existed in both was caused by hypertrophy of the same structure, analysis of the leading facts shows, as regards the first case, that there was an absence of suffering except at intervals; that the general health was not impaired; that the duration of life was not abridged; and that all this was so because the prostate, notwithstanding its large size, did not interfere with the functions of any part of the urinary organs, and, specially as applying to our present subject, did not interfere with the facility (except at intervals) and completeness of the urinary evacuation. While, on the contrary, in Case II., though the part primarily affected was less augmented in size than in the case just noticed, suffering soon came to be almost constant; the general health was rapidly impaired; death occurred in four years from the first manifestation of local inconvenience, and was the direct result of disease of the urinary organs; the whole train of evils having been caused by unceasing difficulty in effecting the evacuation of urine and the continued incompleteness of the evacuation occasioned by the hypertrophied gland.

The presence of an instrument in the bladder is always more or less a source of irritation, but, as it sometimes becomes necessary to select the least of two evils, the retention of a catheter for a few days is occasionally to be preferred to the repeated introduction of an instrument, especially if the latter is attended with difficulty, or the patient is at an inconvenient distance from the surgeon. A “retention catheter,” to afford

the maximum of benefit while it creates the minimum of irritation, should possess the following features:

1. Greater flexibility than the ordinary flexible catheter.
2. The means by which the catheter is retained should not be within the bladder, but in the anterior portion of the urethra.

These desiderata are more nearly attained by Mr. Jonathan Hutchinson's instrument than by any other with which we are familiar. (Fig. *K*.)

The "Nélaton catheter" is another instrument not sufficiently known here. Its softness, high finish, and *great* flexibility, render it eminently suitable for the purpose just indicated. On account of its extreme flexibility, it has to be introduced by a series of sudden pushes, or, if that fails, it is mounted on a stylet of the proper curve. We believe it is worn with less discomfort than the ordinary flexible catheters.

We suggest the following list of instruments as constituting a compact and complete "retention-case:—"

Ten filiform whalebone guides, variously bent and twisted at their extremities.

Ten filiform gum guides, with screw-heads to fit.

Silver catheter, No. 7, French. (Fig. *A*.)

Tunneled catheter, No. 7, French. (Fig. *B*.)

Thompson's probe-pointed catheter. (Fig. *C*.)

Catheter with short beak open at its extremity, with obturator. (Fig. *D*.)

Ten French olivary gum catheters of various sizes. (Fig. *E*.)

Four over-curved English gum catheters, Fig. *F*, kept mounted on a stylet (different curvatures). It is especially important that the last inch of these instruments is well curved.

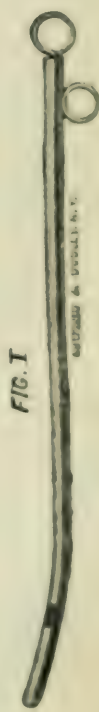
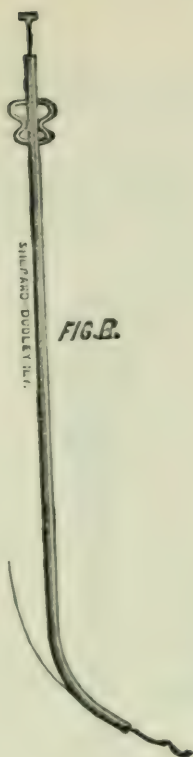
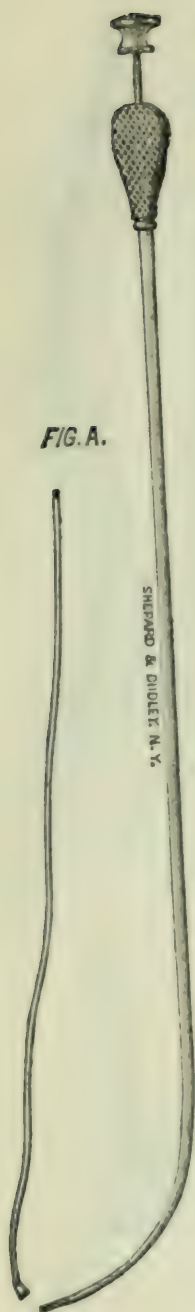
Vertebrated catheter. (Fig. *G*.)

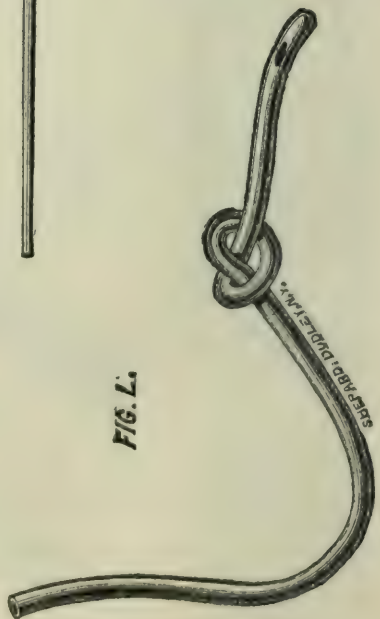
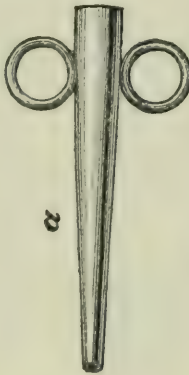
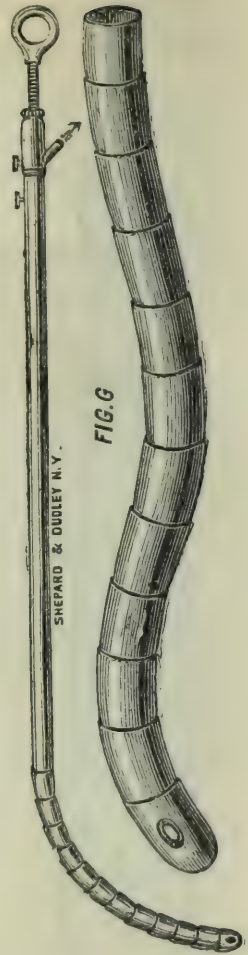
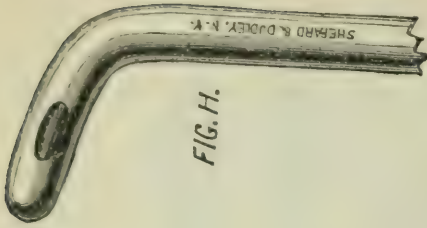
Prostatic catheter of Mercier, "Sonde Condie." (Fig. *H*.)

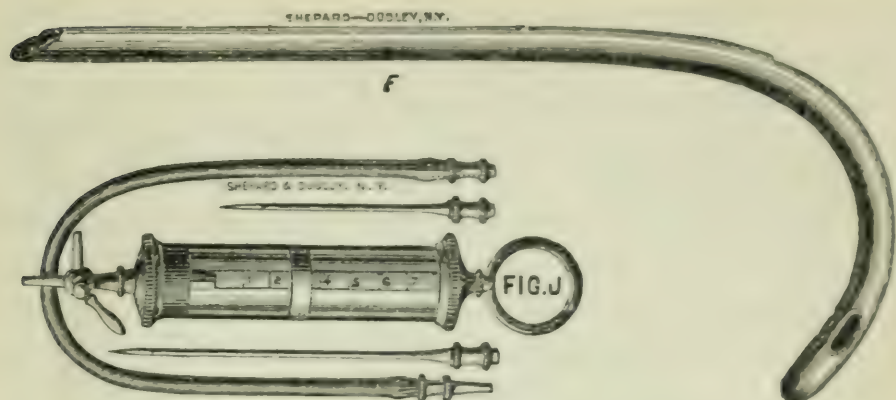
Female catheter. (Fig. *I*.)

Dieulafoy's small aspirator. (Fig. *J*.)

Mr. Hutchinson's "retention catheter" (Fig. *K*.) consists of a silver prostatic catheter (which may be used as an ordinary catheter), with a large eye in its concavity a short distance from the end. This is introduced into the bladder, and







through it a piece of soft and extremely flexible India-rubber tubing or catheter. A stylet is now tied to the outer end of the rubber, so that the latter may be kept in position while the conducting catheter is removed. This effected, a small metallic nozzle (*a*) with rings is passed about three-quarters of an inch into the end of the rubber catheter to allow of its being fixed to the penis, and a styleted plug (*b*) one and a half inch in length is fitted thereto. This latter serves not only the purpose of a plug, but stiffens the first two inches of the tube, and thus constitutes the means which prevents the expulsion of the instrument from the bladder.

Nélaton's catheter. (Fig. *L*.)

The "retention case" is furnished by Messrs. Shepard & Dudley.

ART. III.—*A New Apparatus for Extensor Paralysis.* By JOHN VAN BIBBER, M. D.

At the February meeting of the New York Society of Neurology and Electrology, I had the honor to present a case of lead-paralysis,¹ treated by an apparatus designed not only to correct the deformity, but also to act as a means of more rapid and complete cure. The plan of treatment should be equally applicable to many paralyzed conditions, but the appliance which I shall here describe is especially intended for extensor

¹ I am under many obligations to my friend Dr. Jno. J. Mason for allowing me to select this case from his large and interesting clinic.

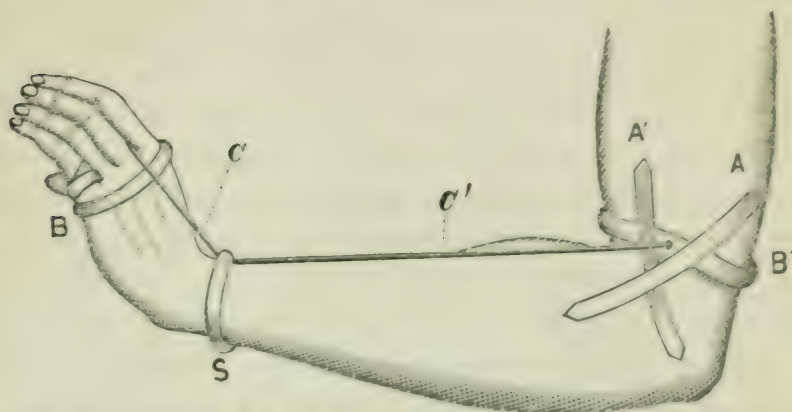
paralysis of the forearm, whether it be from toxic or from other causes. The very interesting paper of Dr. Wm. R. Fisher (NEW YORK MEDICAL JOURNAL, May, 1873), on "The Effects of Tension and Relaxation of Muscle upon Electro-Muscular Contractility," first called my attention to the fact that the position of a muscle would influence to a marked degree its reaction to an electric current. Dr. Fisher showed by experiment that muscles in a relaxed condition respond much better to the stimulus of electricity than when they are stretched, or in a state of tension.

If, then, the position of a muscle has such a marked effect upon the action of an electric current, it is but reasonable to suppose that the element of position is much more important than it has heretofore been considered, and that paralyzed muscles, forced by their antagonists into abnormal positions, are not in a favorable state to promote recovery. In fact, it is self-evident that a muscle with its fibres stretched to their utmost capacity for any length of time, is in a totally unphysiological condition. In the case of paralysis before mentioned, it was thought, if the extensor group could by mechanical means be placed in a more natural position, and the muscular fibres relieved from their constantly stretched condition, that there might be reasonable hope of a more speedy recovery.

After many attempts to secure this advantage by means of strips of plaster, it was determined to try the India-rubber muscle as used by Dr. Lewis A. Sayre in orthopedic surgery. The great difficulty in the use of such an appliance was to effect its application without causing injurious pressure upon the circulation of the arm and hand. I am not aware that these elastic tubes have been used before to correct this deformity, or attached by a method so simple and so free from pressure as that which I shall now describe. Two bands of inelastic webbing, pierced by eyelets at certain points, and each having a convenient buckle, serve as points of attachment. The one for the hand, about three-quarters of an inch wide, so made, that the free end placed upon the palm pointing toward the thenar eminence, and the eyelet-hole resting on the ball of little finger, the band folded once around that finger and passed over dorsum of the hand, the buckle would come

in a convenient place upon the palmar surface. The band for the arm about one inch in width, so arranged that, the eyelet being placed upon a line a little above the external condyle, the buckle would rest upon the internal surface of the arm.

As seen in the illustration, two transverse strips of plaster are adjusted to the arm so as to form an angle just below the



AA', strips of plaster; *BB'*, bands around hand and arm; *CC'*, India-rubber muscle; *S*, shirt-sleeve acting as ligament.

eyelet, and thus relieve the band, which should be buckled loosely, from all injurious traction. The fold around the little finger, and the muscle resting upon the webbing on the dorsum of the hand, enable us to buckle the band loose enough to insure perfect abduction of all the fingers. Finally, a piece of India-rubber tubing of correct length and medium elasticity, with one of Dr. Sayre's metallic hooks attached at each end, constitutes the entire apparatus.

Looking upon this artificial muscle as performing to some extent the duty of those paralyzed, I can probably best describe its application by saying, in anatomical language, that it arises from a point a little above the external condyle, and passing downward on the extensor surface of forearm, under the cuff, which we might call the annular ligament, forward over dorsal aspect of the hand, passing between the index and second fingers, which serve as a trochlea or pulley, then transversely across the palmar surface of the hand, and is inserted at a point about the articulation of the fifth metacarpal bone with its first phalange.

By this means, in a condition of extensor paralysis, we

secure an artificial muscle, easy of application, and efficient in action, and, above all, that can be applied without exerting undue pressure at any point.

Perfect relaxation of muscle by mechanical means would not, I am confident, accomplish the results I have seen from the use of this instrument, and at the same time would not give to the patient as useful a hand. For here, without having power in the extensor group, we simulate as nearly as possible Nature herself, and in the daily uses of the arm, by alternate relaxation and contraction, we bring the muscles as near their normal movements as the deformity will allow. And I would place great emphasis upon this point, that in these changes of position we have changes in circulation; that when the muscle is intensely stretched, the capillary vessels are pressed upon, and their calibre reduced; while, on the other hand, in a relaxed condition of the muscle, nutrition can go on with less interference. Certainly in health, only by movement and exercise, can we produce developed muscle. Therefore, when the power of motion is lost, when paralysis has deprived any muscles of an element so important to them in their normal state, we should in our treatment endeavor to imitate their natural action as the surest means of bringing about recuperation.

Experience has shown that treatment by electricity is rewarded by good results, but only after long and patient care; and the one case thus far treated by the method suggested in this paper, has proved that it is a valuable addition to the treatment heretofore recommended. I would venture to assert, though I have not tested it, that the temperature of the paralyzed extensor group, aided by this appliance, would be appreciably higher than if the muscles were allowed to remain in their pathologically stretched condition.

Under this plan of treatment I think lead and other extensor paralyses will be much more successfully treated, as I am convinced that the intense stretching of the muscles tends to prolong the paralyzed condition, and, even when recovery would otherwise take place, this unnatural position prevents the muscles from regaining their contractility.

I have also lately tried this method, in a case of ptosis, by

attaching a thin ribbon of India-rubber to the upper eyelid and forehead by means of court-plaster, which, when dry, is painted over with collodion. The case is now under observation. The patient experiences much comfort from the appliance, as, the recti muscles being but slightly involved, he is rarely troubled with diplopia. The elasticity of the rubber allows the patient to close the eye, but upon ceasing muscular effort the eye is again opened.

ART. IV.—*Puncturing the Mastoid Cells.* By J. P. CREVELING, M. D., Auburn, N. Y.

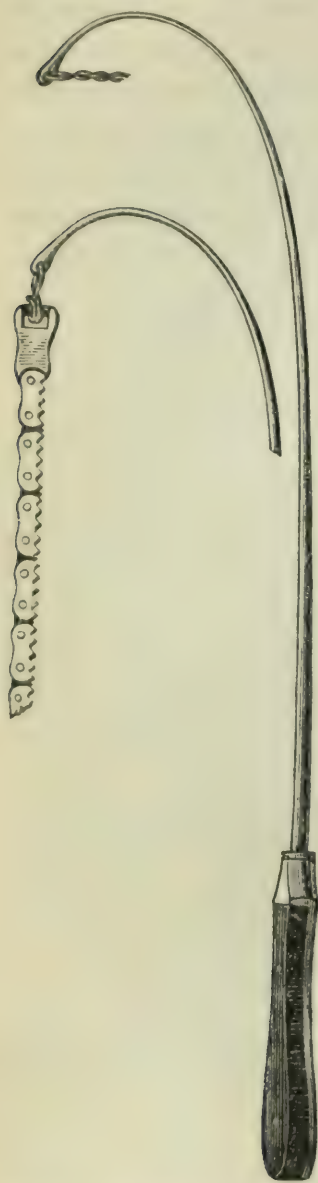
THE *Medical Record*, for January, contains an article in which is discussed the best form of instrument for puncturing the mastoid cells. Dr. Crosby (one of my former instructors) uses a common gimlet; Dr. Hayes prefers a trephine. The instrument I have used is an ordinary trocar, which I think possesses the following advantages over either the gimlet or trephine:

1. There is less danger of injuring the internal table, an occurrence of no little importance to the operator or patient.
 2. It is much more manageable than either a trephine or gimlet.
 3. The operation can be performed in less time.
 4. It is the only instrument required, the cutting edges of the trocar dividing the soft parts sufficiently for the escape of the contained fluid.
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ART. V.—*Description of a New Instrument, devised by Prof. Frank H. Hamilton, M. D., for conducting a Chain-saw beneath a Bone.* By FREDERICK E. HYDE, M. D.

ON Friday, March 20th, at his surgical clinic, in Bellevue Hospital, Dr. Hamilton introduced a new instrument for conducting a chain-saw beneath the bone, which he has had constructed recently. The case in which the instrument was used was a resection of the hip-joint, and it was found to work

admirably. Hitherto, the doctor remarked, he had often experienced difficulty in passing the saw, and he had seen no instrument which seemed to supply exactly what was needed.



The instrument is composed of a shaft perforated at its distal extremity, and supported by a flattened handle. The handle is about two and a half inches in length. The shaft, made of metal, has a moderate flexibility in its lower third, so that this portion may be bent to the proper curve. A piece of annealed iron wire, No. 20, two inches in length, is passed through the perforation in the lower end of the conductor, doubled upon itself and twisted. In passing the instrument underneath the bone, this loop of wire floats back, and is not liable to become entangled in the tissues. When the extremity is brought into view, the twisted wire is passed through the fenestra at the end of the chain, and doubled upon itself; from which position it is easily disengaged after the chain is in place.

Instead of the loop of wire, which is very simple and satisfactory, a spring-catch might be substituted, similar to those used for holding watch-chains.

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[No. 6.]

Original Communications.

ART. I.—*On the Mechanism of Hearing.*¹ By ALBERT H. BUCK, Instructor in Otology in the College of Physicians and Surgeons, New York; Aural Surgeon of the New York Eye and Ear Infirmary.

It has often been said, and with entire justice, that no other part or organ of the human body is so beautiful in structure as the ear. Its tympanic membrane, its chain of ossicles, its wondrous labyrinth containing cavities within cavities and thousands of vibratile chords—all these together go to make up an organ of exquisite architectural beauty and one that is marvelously adapted to the purpose for which it is designed. This delicate organ, with its multitude of fragile elements, needs the most ample protection, and we find it, accordingly, buried deep in the bone whose name (*petrous*) tells the story of its hardness. Inaccessible, as it is, to the eye, the wondrous interior of the labyrinthine structures has long refused to give up its secrets. What we know to-day is the result of years spent in untiring energy, attended with repeated failures. One by one, however, the disputed anatomical points are being settled, and it is safe to say that the day is near at hand

¹ Prize Essay of the Alumni Association of the College of Physicians and Surgeons, New York, March, 1874.

when our knowledge of the anatomy of the ear will be as accurate as that which we possess of the eye. In fact, the progress which has been made, not only in the anatomy, but also in the physiology of the ear, has been so great during the past few years, that it will surely not appear a presumptuous thing to venture here upon an explanation—in some respects new—of how the act of hearing is performed.

FIG. 1.

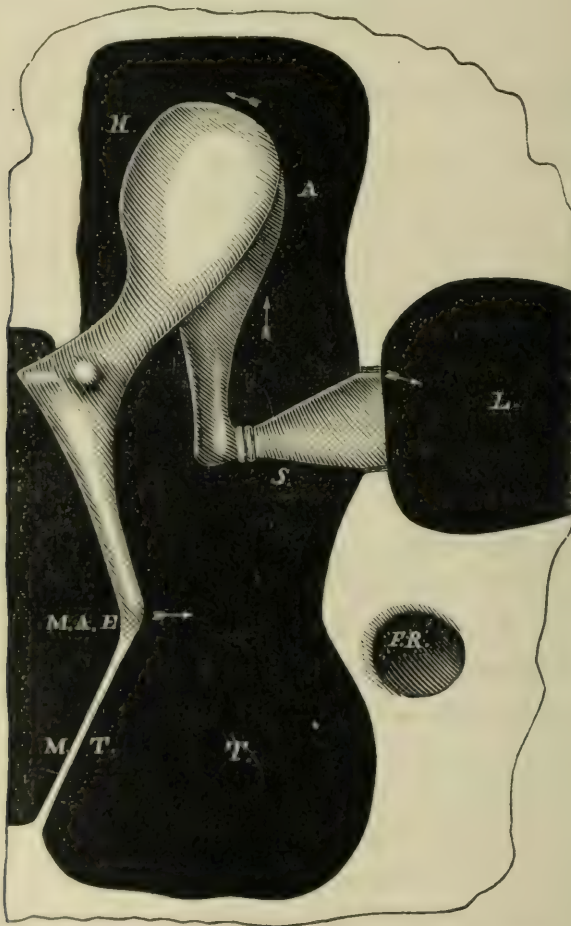


DIAGRAM SHOWING THE RELATIONS OF THE OSSICLES TO THE EXTERNAL AUDITORY CANAL AND LABYRINTH.

T, cavity of the tympanum; *L*, labyrinth; *M A E*, meatus auditorius externus; *H*, hammer; *A*, anvil; *S*, stirrup; *M T*, membrana tympani; *F R*, fenestra rotunda.

Before entering upon our topic, it will perhaps be best to state that for the sake of clearness we shall, as far as possible, avoid all discussion of disputed points. For the same reason we shall simply allude to or entirely omit all those points in anatomy which seem to have no important bearing upon the main questions at issue. Wherever diagrams will facilitate

the description, they will be used, though in most instances in such a form as rather to throw light upon the theory than to accurately demonstrate the anatomy. At the same time no essential anatomical point will be omitted or treated with undue attention.

The ear in mammals consists of three different cavities—the *external auditory canal*, the *tympanum*, and the *labyrinth* (Fig. 1). The first cavity is nearly cylindrical in shape; at one end it communicates with the outer world by a broad, free opening, while at the other it is entirely shut off from the cavity beyond (tympanum) by a thin, inelastic membrane—the *membrana tympani* (*M T*). The second cavity, so far as the naked eye can see, is a closed cavity, filled with air, which, through the medium of a minute canal (the safety-tube of the Eustachian canal) is kept at the same degree of density as the air on the outer side of the *membrana tympani* (Rüddinger). The length and height of this cavity are very nearly equal, but the breadth is much less than either. The outer side of this peculiarly-shaped cavity is composed chiefly of the *membrana tympani*, while the inner is a somewhat dome-shaped surface of bone, covered of course with mucous membrane. In this inner wall of the cavity are two openings—the one oval in shape, the other round—which lead by separate passages into the last cavity or system of cavities of the ear—the *labyrinth*. In the natural state these openings are closed, the upper one by the foot-plate of the stirrup, the lower by a delicate membrane (*membrana tympani secundaria*). The connecting link between the vibrations of air in the first cavity (or external auditory canal) and the auditory nerve, which is spread out in a portion of the third cavity (*labyrinth*), is formed by a chain of three ossicles, which arch the space separating the inner from the outer wall of the second cavity (*tympanum*). It is therefore essential to clearly understand the mechanism of these ossicles before we can discuss intelligently the more complicated mechanism of the *labyrinth*, and especially of that part of it called the *cochlea*.

Let us first take the sea-turtle and examine the simpler auditory apparatus (*see* Fig. 2) which we find in that animal. Here the substitute for the *membrana tympani* is situated al-

most immediately beneath the surface of the hard skin or shell on the side of the head, this animal having no external auditory canal. This substitute is nothing more nor less than the flaring end of a slender bone, about two inches in length, whose other end, likewise somewhat flaring, terminates in the labyrinth. This slender rod (*columella*) lies, throughout almost its entire length, in a bony canal, and fits it so accurately that

FIG. 2.

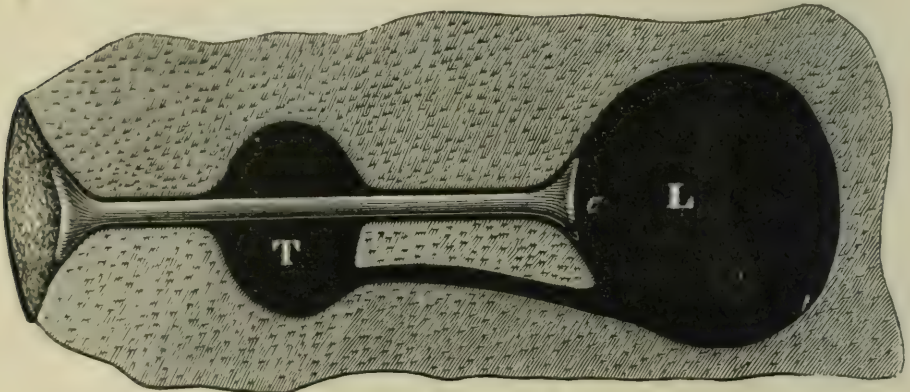


DIAGRAM OF SEA-TURTLE'S EAR.

T, tympanum; *L*, labyrinth; *c*, columella.

the only possible motion which can be communicated to the rod must be in the direction of its length. Pressure made at the outer end causes the inner end of the rod to project to a corresponding degree into the labyrinth; and, the moment the pressure is withdrawn, the rod, by reason of the highly-elastic ligaments which hold it in place, instantly returns to its original position.

The sea-turtle, then, furnishes us with a good example of the simplest substitute for the chain of ossicles, while at the same time the piston-like action of the rod throws out a hint as to the possible mechanism of the more complicated apparatus in the human ear.

Instead of a single rod, we find in the mammalian ear three distinct ossicles, called respectively the *hammer*, the *anvil*, and the *stirrup*. These three are connected together in a peculiar manner. The hammer, the first of the series, occupies such a position on the outer side of the tympanum that its handle (*s p* to *U*, in Fig. 3) projects from above downward as far as to the centre (*U*) of the membrana tympani, with

which it is intimately united (*see* also Fig. 1). In the next place the upper limit of this membrane consists of a band of fibres, which holds the hammer very firmly at a point midway between the end of the handle and the top of the head, and allows it to perform only limited rotary motions, inward and outward. The second ossicle, the anvil, grasps as it were the head of the hammer by means of a peculiar interlocking of their respective articular surfaces.¹ From the body of the anvil two processes project, the one backward to articulate with the posterior wall of the cavity, the other downward to articulate with the head of the third ossicle, the stirrup. While the articulation between the hammer and the anvil is of such a nature as to admit of almost no play of the articular surfaces upon each other, that between the long process of the anvil (*see* Fig. 1) and the head of the stirrup,² on the contrary, admits of full play between the two surfaces.

Finally, the articulation between the foot-plate of the stirrup and the margin of the oval opening, which leads to the labyrinth, consists simply of a band of elastic fibres that span the narrow space which separates the border of the foot-plate from the margin of the window in which it fits.

What part, then, does this apparatus play in the function of hearing, and what are the mechanical effects of its action upon the fluid of the labyrinth? Obviously, to transmit accurately to this fluid body the same impulses which the membrana tympani receives. The mechanism may be thus described :

¹ Helmholtz, who was the first to describe the real nature of the malleo-incudal joint, compared it to "the joint used in certain watch-keys, where the handle cannot be turned in one direction without carrying the steel shell with it, while in the opposite direction it meets with only slight resistance."

² This articulation is not unlike the knee-joint, where the articular surfaces are separated by an interarticular cartilage (called *meniscus* in the stapedo-incudal joint).

FIG. 3.

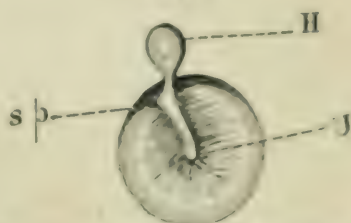


DIAGRAM SHOWING THE RELATIONS OF THE HAMMER TO THE MEMBRANA TYMPANI.

H, head of hammer; H, the tip of the handle of hammer, corresponding to the centre of the membrane; s p., the short process of the hammer.

Suppose a purely simple tone of one hundred vibrations per second to be sounded within hearing distance. The air in the immediate vicinity of the membrana tympani will be alternately condensed and rarefied one hundred times during the period of a second; or, in other words, the membrane itself will vibrate inward and outward the same number of times. But inasmuch as the handle of the hammer is, so to speak, an integral portion of the membrana tympani, it, too, will perform the same number of excursions inward and outward. Now, in the next place, the firm union between the head of the hammer and the body of the anvil will oblige the latter to follow the direction communicated to the head of the hammer by the excursion of its handle. A glance at the figure (Fig. 1) will show that on the anvil the direction of the motion imparted to it will vary according to the locality: thus, if the handle of the hammer be in the act of making an excursion inward, the top of the body of the anvil will be found moving in an outward and somewhat upward direction, while at the extremity of its long process (near the head of the stirrup) the motion will be chiefly upward, with somewhat of an inclination inward. The stirrup, whose head plays freely within the articular capsular ligament upon the end of this long process, will convert the impulse thus received into a motion, partly hinge-like and partly piston-like in its character.

It is, therefore, the function of the chain of ossicles to transmit to the fluid of the labyrinth whatever impulses may be communicated to the membrana tympani by sonorous vibrations in the air of the external auditory canal.¹

Now, whatever may be the nature of these vibrations, it is evident, from the character of the attachments which hold the hammer *in situ*, that the only impulses which this ossicle is capable of transmitting are such as may be communicated to a single point in the handle, as, for instance, the tip. In the case, therefore, of a purely simple tone—by which is meant one that is perfectly free from all admixture of over-

¹ This doctrine, which was first put forth by Edward Weber, in 1851, was confirmed experimentally by Politzer, in 1868, and afterward by other observers.

tones—the point referred to would be subjected to a simple, pendulum-like motion. In the case of a complex tone, or of two or more tones produced simultaneously, it is not so easy to represent clearly to the mind's eye the movements which the point in question must execute. Prof. Alfred Mayer, of the Stevens Institute of Technology (Hoboken, New Jersey), has devised an experiment which almost renders these movements visible to the eye. It was executed in the following manner:

Placing a stretched membrane in a vertical position, and attaching fine threads of silk to its centre, Prof. Mayer put them moderately upon the stretch, and fastened them, each one to a tuning-fork (to one branch only) of different pitch. Upon sounding an organ-pipe (an instrument rich in overtones) on the other side of the membrane, he distinctly heard the tones of some of the forks. The moment the threads were cut, the tones ceased. After restoring the threads, the forks again vibrated audibly. When the organ-pipe was changed for one of a different pitch, it was observed that a different set of forks were excited to vibration.

While this experiment, then, furnishes us with a most valuable means of analyzing sound, it also clearly demonstrates that a given point in a solid body can be made to perform, at one and the same instant of time, the vibrations belonging to a number of tones of different pitch; in the present instance these were the fundamental note of the organ-pipe, together with its overtones. This complex vibration has often been compared to the changes which take place on the surface of a body of water. Thus, for instance, in looking at the ocean, we often observe that the surface is thrown into undulations by long and heavy swells; while upon them are numerous waves and smaller wavelets. Here, then, we see an illustration of the manner in which several kinds of waves may set in motion the same body of water at the same moment of time, without interfering with each other in any way.

Now, if we admit that the ossicles can vibrate in this manner in response to four or five tones, sounded simultaneously, there remains no serious obstacle to the belief that they can also vibrate in response to an almost indefinite number of

tones. In listening to conversation, to music, and to simple noises, our *ossicula auditus* are simply called upon to transmit at one and the same moment of time a varying number of impulses—for music, noises, and conversation, are all reducible to combinations of purely simple tones.

In the last place, how is it possible for the terminal filaments of the auditory nerve to analyze these impulses of such varying rates of vibration? Before answering this question, it will be necessary to take a glance at the anatomy of the last cavity mentioned above—the labyrinth—and to inquire into the mechanical effects produced upon its contents by the piston-like motion which we have attributed to the stirrup.

If we take a temporal bone, either in its natural condition or in the dried state, and endeavor by our eye to get some idea of the form, size, and relations of the labyrinth, we shall fail completely. There are only two points where we can get a glimpse of this portion of the ear, and these are at the two openings mentioned above as being situated in the inner wall of the middle cavity or tympanum. At all other points the various channels and cavities of the labyrinth are deeply embedded in the substance of the petrous portion of the bone. It is only by the aid of the hammer, the chisel, and the knife, that we can obtain the thin shell of bone which represents, as it were, the mould of the contained cavities. In this way we find that the labyrinth—we are speaking now only of its osseous boundaries—consists of a central cavity, not more than two lines in diameter, from one side of which spring, like arches, the three semicircular canals, while from the other side a canal leads into the snail-shaped body called the cochlea. In their natural state these bony cavities are filled with membranous structures and fluid. Thus, for example, the central cavity—or *vestibule*, as it is technically called—contains two distinct membranous sacs (*see* Fig. 4), which together do not quite take up the entire space of the cavity, but leave room, in the immediate vicinity of the foot-plate of the stirrup, for a certain amount of free fluid (Henle). The smaller of the two sacs, the *sacculæ* (*S*, Fig. 4), communicates with one of the membranous tubes of the cochlea, the *ductus cochlearis*. The larger one, the *utricle* (*U*, Fig. 4), is continuous with the

membranous tubes, which partially fill the semicircular canals; in fact, the two constitute an intercommunicating system of cavities, containing fluid, and bounded by membranous walls, so that pressure made upon the utricle will result in an increase of tension in the walls of the membranous semicircular canals.

If we uncoil the cochlea, and so convert it into a single straight bony tube, we shall find that its shape resembles that of an elongated truncated cone, whose larger base corresponds to the vestibular end of the cochlea, while the smaller would

FIG. 4.

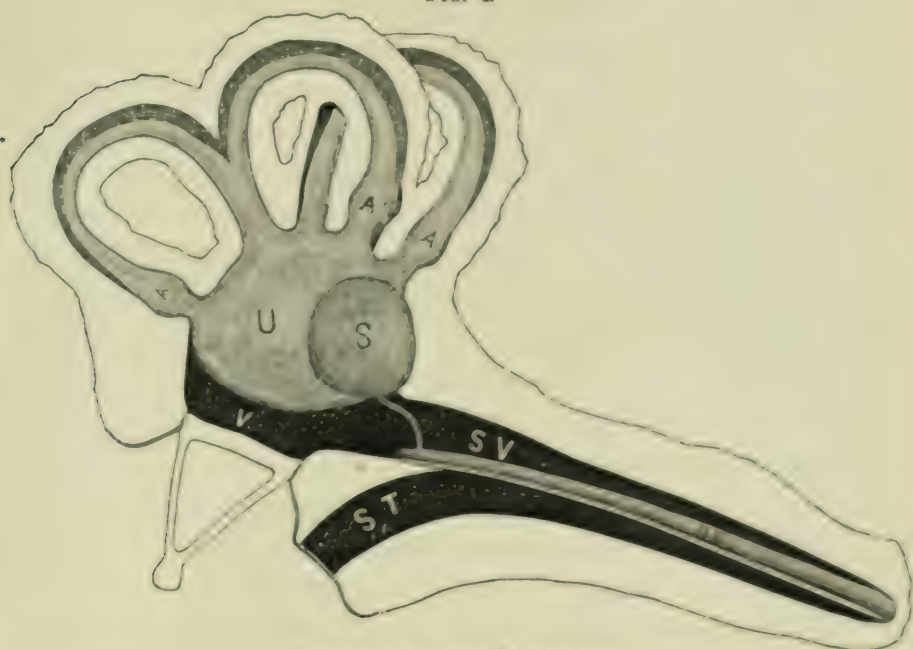


DIAGRAM OF THE LABYRINTH.

V, the vestibule, or central cavity, which is nearly filled by the utricle (*U*) and the saccule (*S*). Near the foot-plate of the stirrup, there is free fluid, which also extends up into the scala vestibuli (*SV*) of the cochlea. *DC*, the ductus cochlearis, which communicates by a slender membranous channel (*canalis reuniens*) with the saccule. Between the cochlear duct and the scala tympani (*ST*) is a narrow white band, representing the *membrana basilaris*. At the extreme tympanic end of the scala tympani, a faint white line indicates the position of the *membrana tympani secundaria*. *A, A, A*, ampullae of the membranous semicircular canals, which, in these regions, fit pretty closely their surrounding bony walls.

represent the cupola, or highest point of the cochlea in its natural position. Now, there are certain membranous¹ septa which divide this single conical tube into three distinct and entirely separate channels, one communicating directly with the vestibule, while the other two are entirely shut off from any communication with it. In the first place, a sort of dia-

¹ In one instance partly membranous and partly osseous.

phragm divides the tube horizontally into an upper and a lower passage, each of nearly equal size. The upper one communi-

FIG. 5.

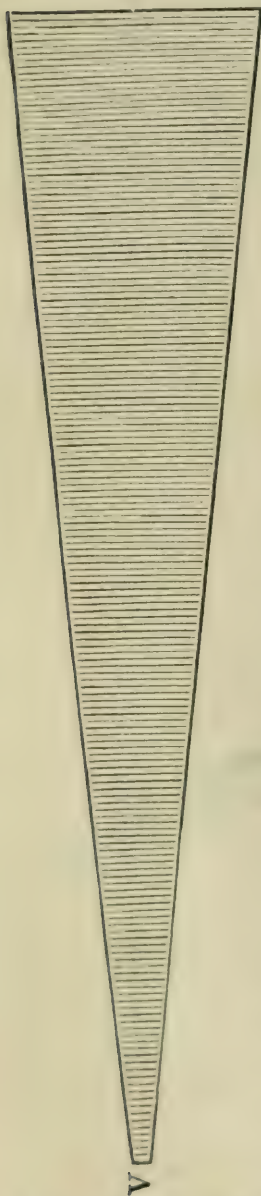


DIAGRAM OF THE MEMBRANA BASILARIS.
V, its vestibular end; c, that in the cupola.

cates by a broad mouth with the cavity of the vestibule, and for this reason has been named the vestibular channel or *scala vestibuli*; the lower follows its course toward the tympanum, but at the round window is shut off from it by a thin membrane—the *membrana tympani secundaria*. This lower channel is called the *scala tympani*. (Follow Fig. 4 for all these points.) A second diaphragm, which runs at an angle of about 45° with the first (*see* Fig. 6), divides the upper channel into the *scala vestibuli* proper and the *ductus cochlearis*. This last-named duct or channel is in reality a closed sac; its shape being that of an elongated truncated cone, whose larger base occupies the cupola, while the smaller lies at the very entrance to the cochlea in the vestibule. The *ductus cochlearis* may therefore be described as a body of fluid imprisoned within membranous walls, and containing certain peculiar structures, which will be mentioned in detail hereafter; and it may also be described as playing the part of a diaphragm between the fluid of the *scala vestibuli* and that of the *scala tympani*.

We have now completed our hasty sketch of the labyrinth as a system of channels and closed sacs containing fluid, and it still remains for us to speak of the peculiar structures contained within the *ductus cochlearis*—structures which have been shown to stand in direct communication with filaments of the auditory nerve, and which must therefore be considered as constituting the real terminal apparatus of hearing, in the same sense as the retina is the terminal organ of sight.

In the first place, the diaphragm, mentioned above as dividing the entire cochlear tube into an upper and a lower passage, will be found on microscopic examination to consist partly of bone and partly of membrane. The membranous portion of this diaphragm—if it were possible to dissect it out entire and spread it out before us—would be found to have a shape something like that given to it in Fig. 5. The small end *V* represents the commencement of the membrane near the round window, and the large end *c* its termination in the cupola. If we remove all the superimposed structures and examine this membrane under the microscope, we shall find it to consist of an almost countless number of rods, separated one from another by a glue-substance of but slight adhesive power. If we leave the superimposed structures *in situ*, and make a transverse section through the membrane, we shall find that it carries upon its upper surface the following peculiar anatomical elements (*see* Fig. 6).

1. A nearly central¹ arch, composed of two pillars, called respectively the *inner* and *outer pillars of Corti*. The shafts of these pillars are comparatively slender, but their bases and their heads are broad. The points to which attention should be called in the anatomy of these pillars are, their great strength and stiffness, compared with the other structures to be found in the ductus cochlearis; the constantly-increasing distance between the bases of the inner and outer pillars, as you go from the vestibule to the cupola; and, finally, the rounded character of the articular surfaces, where the heads of the inner and outer pillars come together—a peculiarity of connection which would indicate that a certain amount of play will be possible between the opposite heads of the pillars, in case the vibrations of the entire apparatus take place in a vertical plane.

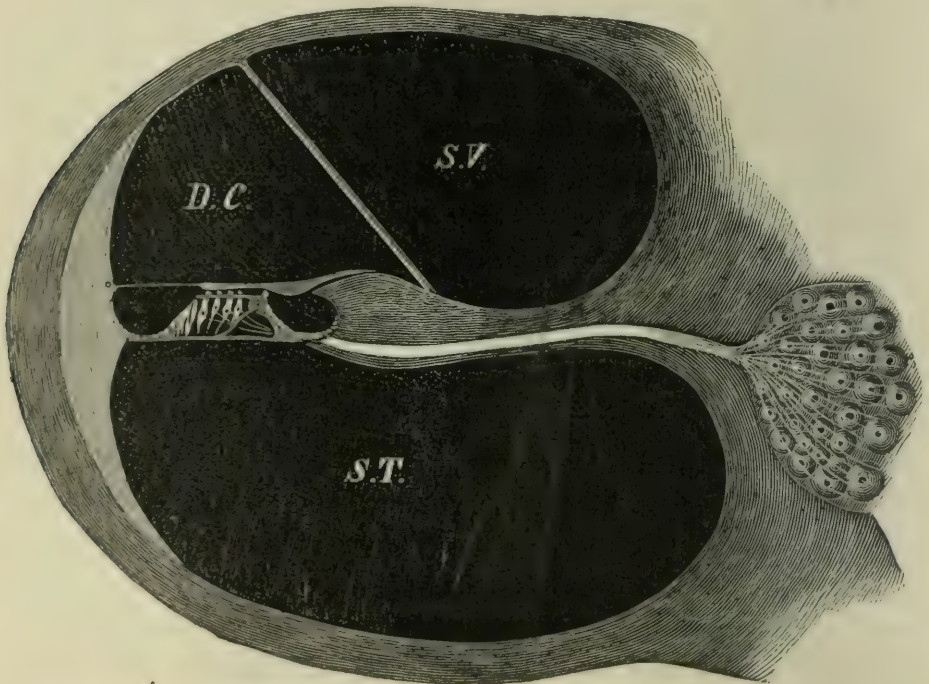
2. A peculiar fenestrated membrane, the *lamina reticularis*, which extends in an horizontal direction some little dis-

¹ The arch occupies such a position that the bases of the outer pillars stand very nearly in the centre or median line of the membrane. It is a significant fact that the outer rows of hearing-cells also occupy the central portion of the membrane, or that part which performs the greatest amplitude of excursion.

tance outward from the heads of the pillars of Corti, to which it seems to be in some way attached.

3. Five rows of ciliated cells, four on the outer side of the arch, and one on the inner side, close to the inner pillars of Corti. The four outer rows insert their heads into the openings of the fenestrated lamina reticularis in such a manner

FIG. 6.



TRANSVERSE SECTION OF A COCHLEAL WHORL.

On the right, embedded in the substance of the bone, is a group of *ganglion cells*, through which the fibres of the auditory nerve pass before entering the *lamina spiralis ossea*. This latter is represented in the figure as a broad septum, separating the *scala vestibuli* (S V) from the *scala tympani* (S T), and containing a canal for the passage of the auditory nerve-fibres. While in the canal these fibres still possess a medullary sheath, but, on emerging therefrom into the *ductus cochlearis* (D C), they break up into naked axis-cylinders and terminate (as white threads in the drawing) in the single *inner* and four *outer hearing-cells*. The cilia of the four outer hearing-cells may be seen projecting through the *lamina reticularis*; those of the single inner cell (invisible in the drawing) project above the head of the *inner pillar of Corti*. The lamina reticularis is drawn as an horizontal projection (outward) of the upper portion of the head of the *outer pillar of Corti*. Underneath, these pillars rest upon the *membrana basilaris*, which terminates on the outer side in the *ligamentum spirale* (represented in the figure as a pale, crescent-shaped pad of connective tissue, fitting accurately to the surrounding shell of bone). The cilia of the hearing-cells come in contact above with the *membrana tectoria* or *Corti's membrane*, which springs from the upper side of the lamina spiralis ossea, near its free extremity, and terminates, by a thin extension, in the ligamentum spirale. *Reissner's membrane* is represented as a straight band, which stretches from the bony wall above, down to the upper side of the lamina spiralis ossea, and separates the ductus cochlearis from the scala vestibuli.

that the cilia stand up like bunches of hair at regular intervals along the surface of the membrane. Bundles of primitive nerve-fibrils from the cochlear branch of the auditory nerve have been traced to all five rows of ciliated cells, but to

no other structures in the ductus cochlearis. Hence the name of *hearing-cells*, which has very appropriately been awarded to these evidently the most important elements in the apparatus we are endeavoring to describe.

4. Simple epithelial cells, destined apparently to serve as a support to the lamina reticularis and to the outer and inner rows of hearing-cells.

5. A peculiar membranous structure, which starts from the upper side of the hook-shaped process of the *lamina spiralis ossea* and extends outward over the lamina reticularis. This membrane is mucoid (or doughy) in consistency, and, from the fact that it lies like a gelatinous veil over, and in contact with, the cilia of the hearing-cells, it is called the *membrana tectoria*¹ or covering membrane. As far as to the outer limit of the hearing-cells, this membrane retains its thick, doughy consistency, but beyond this region it is continued in the form of a very thin lamina to its line of insertion in the *ligamentum spirale*.

It is not necessary, to a clear understanding of the mechanism of the final act of hearing, that we should enter, any more fully than we have done, into the minute anatomy of the ductus cochlearis. What remains for us to do is to follow out, step by step, the mechanical effects upon the various labyrinthine structures of the piston-like vibrations of the stirrup, for it was here that we left off in our efforts to trace the effects of sound upon the apparatus of hearing.

The theory, which is universally accepted by physiologists in explanation of this point, is the one given by Prof. Helmholtz, and called, in honor of that distinguished physicist, "the Helmholtz theory of hearing."² The essential points in it are these: The component fibres of the membrana basilaris (Fig. 5) are to be considered in very much the same light as separate strings, which by a process of loading—that is, weighing them down with the pillars of Corti, the hearing-cells, etc.—have been tuned so as to vibrate in sympathy with all the

¹ Also *membrane of Corti*.

² See his work, entitled "Die Lehre von den Tonempfindungen," Braunschweig, 1870.

appreciable tones, from the highest to the lowest.¹ In fact, for every half-tone of our present musical scale there must be in the cochlea at least thirty-three strings to represent all its possible shades. When the stirrup, for instance, vibrates one hundred times in the second, it must excite to action that particular string, or group of strings, which is tuned to vibrate one hundred times per second. The vibration thus caused makes an impression upon the nerve supplying the vibrating part, and this in turn produces in the brain the sensation of sound. The damping of the vibrations, at the instant the irritation which produced them ceases, is attributed partly to the presence of a fluid medium, and partly to the fact that the vibrating structures proper (the strings of the membrana basilaris and the pillars of Corti) are pressed upon by cell-bodies which are not adapted for vibration.

The vertical vibration of the basilar membrane is distinctly recognized in this theory ; but, in the preliminary description of the anatomy of the cochlea, mention is made of the existence of a small opening (*helicotrema*) in the cupola, through which a communication is established between the scala vestibuli and the scala tympani. Now, according to Kölliker and Reichert, the blind sac of the ductus cochlearis entirely fills the cupola (the vestibular half of it). This statement would seem, then, either to throw doubt upon the existence of such an opening, or to make it a channel of communication between the ductus cochlearis (instead of the scala vestibuli) and the scala tympani. The latter supposition, however, involving as it necessarily does a certain degree of longitudinal current in the fluid of the ductus cochlearis, cannot for a moment be entertained, as it would utterly overthrow any theory based upon the sympathetic vibration of the fibres of Corti's organ. On the other hand, if the blind termination of the ductus cochlearis does not entirely fill the cupola—as some authorities maintain—but leaves room for the fluid of the scala vestibuli to pass through a small opening in the septum into the scala tympani, the theory of a vertical motion for the membrana basilaris will still hold good, as the existence of the helicotrema

¹ The highest tones corresponding to the short strings near the vestibule, the lowest to the long ones in the cupola.

will simply serve to diminish the force of the vertical motion, but not to annul it. My own investigations, so far as they go, favor the view that no communication exists between the two scalæ in the immediate vicinity of the cupola, unless the opening, spoken of so vaguely by the authors, be microscopic in size.¹

In the light of the histological discoveries, made since the time when Helmholtz published his last edition of the "Tonempfindungen" (1870), we would, with all due reserve, venture upon the following explanation of the mechanism of hearing in the cochlea:

We have described the labyrinth as a closed cavity, having but two channels of approach—the round and the oval window—one of which is filled up tightly by the foot-plate of the stirrup. Now, since, according to physical laws, the fluid contents of the labyrinth cannot be supposed to undergo diminution in bulk, under the pressure made by the foot-plate of the stirrup, we must assume—what has now been proved by direct observation²—that the elastic membrane of the round window affords the required yielding-point for this displacement.³

¹ To satisfy myself, if possible, on this point, I removed the cochleæ entire from the temporal bones of an infant, and softened them in a solution of chromic acid and hydrochloric acid (not more than five per cent. of each). When the earthy materials had been entirely removed from the bone, I placed the specimens in ordinary alcohol for a few hours, and with the razor divided them each into two unequal parts, the plane of section being at right angles to the base of the cochlea. In one of the cochleæ, the section passed so close to the bottom of the *cul-de-sac* of the cupola, that it was difficult to determine any thing satisfactory regarding the opening in question. In the other it was a comparatively easy matter, with an ordinary magnifying-glass, and after blowing out the free alcohol, to survey both the vestibular and tympanic surfaces of the septum, which in the cupola divides the two channels from each other. No trace whatever of any communication between the two passages could be detected.

The results of a single examination like this cannot, of course, be considered as sufficient to overthrow the statements of the anatomists. Nevertheless, the lack of definiteness in their descriptions of this opening (*see* Henle's "Anatomy" and Waldeyer's article on the "Labyrinth" in Stricker's "Histology"), taken in connection with its apparent absence in this one case, should lead to new investigations on this point.

² Dr. Charles H. Burnett, of Philadelphia, and others.

³ This statement will be slightly modified farther on.

The first body to receive the impulse of the stirrup is the free mass of fluid which fills the unoccupied portion of the vestibule and the scala vestibuli. Without stopping here to discuss the effects of the stapedial¹ impulse upon the utriculus and semicircular canals, let us proceed at once to the consideration of the effects which this impulse will produce upon the cochlear structures.

In the first place a moment's thought will convince us that, in estimating the effects of the stapedial impulse upon the ductus cochlearis, we may totally disregard the sacculus and the *canalis reuniens*.² The uniform pressure of the fluid upon all sides of these last-named cavities will effectually prevent any thing like a current from the ductus cochlearis to the sacculus, or the reverse, through the *canalis reuniens*. The ductus cochlearis—that is to say, the upper and inner wall of it, or *Reissner's membrane*—is therefore subjected to a uniformly distributed pressure from above downward by the *centrifugal* (if I may so use the term) force of the fluid of the scala vestibuli. As it yields beneath this force, the incompressible body of fluid which fills the ductus cochlearis must in turn find its yielding-point in the entire *membrana basilaris*; for this and *Reissner's membrane* are the only two portions of the wall of the duct which are membranous, and therefore capable of yielding. Finally, the displacement caused in the contents of the scala tympani, by the depression of the entire *membrana basilaris*, is provided for by the presence of an elastic membrane (*membrana tympani secundaria*) at the larger end of this channel.

This brings us, then, face to face with the fact that the entire *membrana basilaris* (including high and low notes alike) is obliged to perform all the excursions which may be communicated to the stirrup or the *membrana tympani* by sonorous vibrations; or, to speak more minutely, with every tone sounded, every “organ of Corti”³ must perform the excursions

¹ *Stapes* —a stirrup.

² The little canal (Fig. 4) which unites the sacculus and the ductus cochlearis.

³ The term “organ of Corti” is used to designate the entire group of structures built upon the *membrana basilaris*.

which belong to that particular tone. But if that be true, it will be asked, why should not *all* the nerve-filaments send communications to the brain; or, in other words, why should we not hear all the notes of the scale whenever any one of them happens to be sounded? This is our answer, and we might add that it has been suggested to us by the peculiar relations of the membrana tectoria to the hearing-cells, and by the passing remark of Waldeyer (in the article referred to above) that "no portion of the labyrinth could be better adapted, by reason of its anatomical construction and position, to perform this function [that of a damper] than the membrana tectoria."

Although it be true that, with every note sounded, all the organs of Corti must perform the excursions belonging to that note, yet it must be remembered that the semi-gelatinous membrana tectoria, which rests upon the cilia of the hearing-cells, will likewise be obliged to perform these same excursions. Over one particular region, however, of the membrana basilaris this will not be the case, namely, in that portion where the thirty or more basilaris fibres are tuned to vibrate in sympathy with the note sounded. At this point the vibrations will be of sufficient vigor to throw off the membrana tectoria. So long, then, as that particular note is sounded, the cilia of the hearing-cells, in the region referred to, will receive a succession of taps from the membrana tectoria, or, to speak more strictly, will strike against this membrane. These blows constitute the true irritation of the auditory nerve. Wherever the blows do not take place, although the auditory nerve-filaments may be agitated in a direction at right angles to their length, there no sensations of sound will be communicated to the brain.

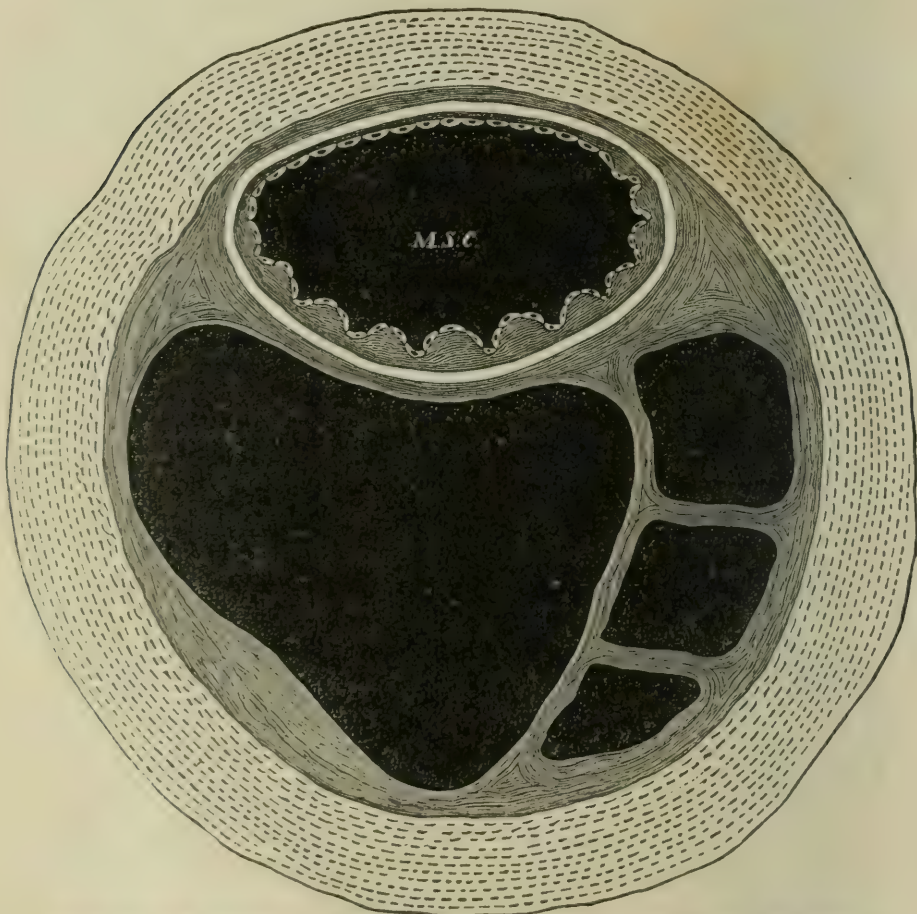
Before leaving the subject, we should like to venture a suggestion as to the function of the semicircular canals.

As is well known, it has been the custom until recently to consider these structures as governing the function of equilibrium (Flourens's theory). About three years ago Arthur Boettcher,¹ of Dorpat, proved by experiments upon living animals that this theory is incorrect. He proposed no new theory, but opened the way for others to do so if they wished.

¹ "Dorpater Med. Zeitschrift," vol. iii., part ii., 1872.

The first thing that attracts our attention in the anatomy of these organs is the peculiar relation of the membranous to the bony canals, the former occupying scarcely a third of the calibre of the latter. Then, in the next place, the space between the membranous canal and the bony walls is filled, not with free fluid, as is the case, for example, in the cochlea, but

FIG. 7.



TRANSVERSE SECTION OF SEMICIRCULAR CANAL. (Copied from Rüdinger.)
M S C, membranous semicircular canal. (For further details, see the text.)

with a reticulated connective tissue, rich in blood-vessels and made up of large meshes containing fluid. In the vicinity of the mouths of these canals, however, it should be noticed that the membranous tubes hug the bone more closely (*see* Fig. 4). If we examine the mode of construction of the membranous canals, we find that the outer elastic wall (*see* Fig. 7) is lined with a sort of mucous membrane whose free surface undulates or is thrown into mounds, and carries a lining of ordinary

pavement epithelium. Another point worthy of notice is the absence of the undulations or mounds on that side of the canal which lies next to the bone—the side where dilatation cannot take place. These anatomical relations and the absence of nerves are certainly suggestive of the thought that the function of these canals must be a mechanical one. Is it not their function, we would ask, to protect the ductus cochlearis and the organs of Corti from injury in cases where the stirrup is driven too violently into the oral window? Any pressure made upon the utriculus can only find a yielding-point in the elastic walls of the membranous semicircular canals; and, furthermore, if the latter were lined with a smooth instead of an undulating¹ epithelial surface, their distention would be followed by a rupture of the epithelial lining. Any sudden and loud noise, like the report of a cannon or a peal of thunder, would be likely to injure the cochlear structures, were not some provision made in the labyrinth for emergencies of this kind. As we have shown, the semicircular canals are not only admirably fitted to serve in the capacity of safety-valves, but their entire mode of construction, especially the absence of all nervous structures, would seem to exclude them from any higher office in the mechanism of hearing.

The suggestion of a recent writer (Hensen), that their function is that of secreting the labyrinthine fluid, has against it the fact that the epithelial cells lining the canals are of the pavement and not of the cylindrical or glandular variety.

ART. II.—*On the Spectrum of Bile.* By J. C. DALTON, M. D.,
Professor of Physiology in the College of Physicians and Surgeons. [Read before the New York Academy of Medicine, January 8, 1874.]

THE nature and properties of the coloring matters of bile are not yet fully understood. The secretion varies considerably in hue in different species of animals, and even in different specimens from the same animal, owing apparently to its different degrees of concentration and to the presence, in

¹ To establish this theory, it will be necessary to ascertain the circulation of blood in these parts, for the anastomosis of the veins surrounding the membranous canal with the veins of the bony walls is absolutely essential to it.

varying proportions, of different ingredients. In various specimens of normal bile we may meet with all the intermediate tints of golden-yellow, yellowish-red, reddish-brown, olive-brown, olive, yellowish-green, and pure green. Human bile is generally of a dark golden-brown; pig's bile of a reddish-orange or reddish-brown; dog's bile of a brownish-olive or bronze color; and sheep and ox bile of a greenish-olive, or more frequently of a pure green. All these differences may be referred to two main classes of tints, in one of which the predominating color is red or reddish-brown, while in the other it is green.

So far as chemical investigation has yet gone, it seems also that two principal biliary coloring matters have been more or less distinctly recognized. One of them is *bilirubine*, a nitrogeneous crystallizable matter, of a reddish-yellow color; the other *biliverdine*, also nitrogeneous and imperfectly crystallizable, which is green. A solution of the reddish-yellow bilirubine becomes changed into the green biliverdine by exposure in thin layers to the oxygen of the air; and a specimen of bile which has originally only a yellowish or olive color may also be turned green by exposure to the air, or by other oxidizing agents, such as nitric acid, or a watery solution of iodine.

Beside these two coloring matters, several others have been enumerated by various authors; but their characters are not very well defined, and there appears to be hardly sufficient evidence that they are really normal ingredients of the secretion.

In the present paper I propose to speak of two different subjects: First, the spectrum presented by fresh bile, which depends on the presence of its normal coloring matters; and, secondly, the spectrum presented by the colored fluid of Pettenkofer's test, which depends for its production on the presence of the biliary salts.

I. The spectroscopic characters of the bile are by no means agreed upon. By several observers either one or two absorption bands are given at varying points between the spectrum-lines D and E. On the other hand, it is said by some that

fresh bile produces no distinct modification of the spectrum, and Vierordt remarks, in a recent publication,¹ that the variety and changeability of its coloring matters are such as to preclude any definite description of their effects without further examination.

Nevertheless I believe, from my own observations, that the bile presents a very distinct and characteristic spectrum. It is not, perhaps, so well marked as that of the blood, but it is still sufficiently so to be important and useful as a means of determining the ingredients of the secretion.

I have examined for this purpose forty-five different specimens of bile, namely, thirteen specimens from the ox; nine from the sheep; eleven from the pig; eight from the dog, and four specimens of human bile. With the exception of the human bile, and, in one case, of dog's bile, all these were taken from the body immediately after death, and either examined the same day or kept in a cool place to be filtered or to settle clear till the next day, in order to preclude any alteration of their natural ingredients.

Ox-bile and sheep's bile is often clear when taken out of the gall-bladder, or, if not so, is easily filtered. Pig's bile is usually quite turbid, but, with the use of some care, may be filtered clear through ordinary filtering-paper. Dog's bile, as a general rule, will not pass through filtering-paper, but may be rendered perfectly clear by being allowed to stand for some hours in a narrow, cylindrical, upright vessel, the impurities subsiding to the bottom. The specimens may then be examined by placing them before the slit of the spectroscope in layers of one, two, three, or four centimetres' thickness.

The mode of indicating the measurements of the spectrum which I have found most useful for physiological purposes is that adopted by Vierordt. In this method we take, to begin with, as fixed points, the eight principal lines of the solar spectrum, A, B, C, D, E, F, G and H. The spaces between these lines are then considered as divided, each into one hundred equal parts; and the situation of an absorption-band is expressed by proportional numbers, counting in a direction

¹ "Die Anwendung des Spectral-Apparates zur Photometrie der Absorptions-Spectren." Tübingen, 1873, p. 140.

from the red toward the violet end of the spectrum. Thus, if a narrow band, or the commencement of a wide one, be placed midway between F and G, its situation is expressed by the formula, F 50 G. If it be placed at only one-quarter the distance, counting from F to G, it is said to be at F 25 G; if at three-quarters the distance, it is at F 75 G. This plan allows a much greater accuracy of description than the indefinite expressions frequently employed, and is at the same time sufficiently exact for all measurements needed in physiological examinations.

The first distinguishing character of the spectrum of bile is that it is *very short*, the light being totally absorbed at a considerable distance from the refrangible end. In the specimens of ox-bile, viewed in a thickness of one centimetre, in no case did the spectrum extend beyond the line F in the first quarter of the blue, and in most instances fell considerably short of it. The average limit of the spectrum was toward the end of the green, at E 60 F. In sheep's bile, viewed in a thickness of one centimetre, the spectrum also terminated within the line F, except in one case, where it extended just beyond that point. Its average limit was in the latter part of the green, at E 45 F.

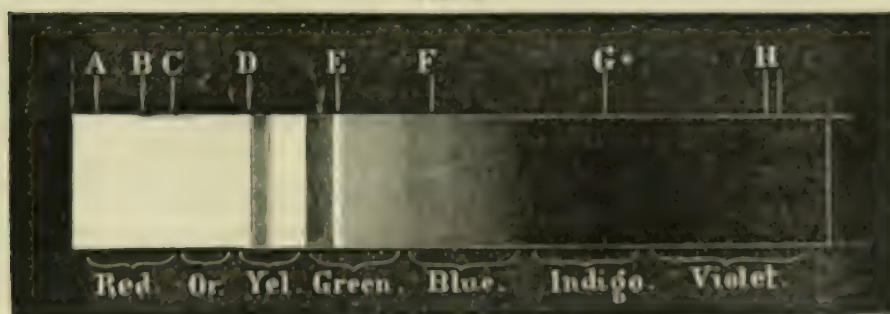
In the reddish-brown, olive, and yellowish-brown bile of the dog, the pig, and the human subject, the spectrum was shorter still; terminating, in pig's bile, on the average, in the first half of the green at the line E, in dog's bile just beyond this point, and in human bile, also in a thickness of one centimetre, within this limit, near the commencement of the green, at D 82 E. When viewed in layers of two centimetres' thickness, the spectrum was proportionately shortened; terminating, on the average, in ox-bile at E 33 F, in pig's bile at D 85 E, and in dog's bile at D 75 E. The bile will even bear a considerable degree of dilution without losing this peculiarity. A specimen of human bile, of a golden-brown color, which, in a layer of one centimetre, gave a spectrum ending a little before E, when diluted with thirty volumes of water was nearly colorless to the eye in a layer of one centimetre, but its spectrum did not extend beyond F 28 G. A specimen of reddish-orange pig's bile, the spectrum of which

terminated just beyond the line E, when diluted with fifty volumes of water, still gave a spectrum that fell a little short of the line G.

As a general rule, therefore, the absorptive power of the bile is remarkably strong for the more refrangible rays, and its visible spectrum is accordingly very short. This character is exhibited by the spectrum of all kinds of bile, but it is rather more marked in the ruddy and yellowish-brown kinds than in specimens where the predominating color is green.

In the second place, the spectrum of bile does not fade away gradually like that of many other colored fluids, but *terminates suddenly*. This is a very well-marked character, and, in the thirty-five observations in which attention was given to this point, it was present in all but two, in sufficient distinctness to constitute a striking feature of the bile-spectrum. In the spectrum of blood, the fading of the light toward the refrangible end is very gradual, even when the two characteristic absorption-bands are well marked. Defibrinated dog's blood, diluted with one hundred parts of water, and viewed in a thickness of one centimetre, gives both the absorption-bands very strongly pronounced; and at the same time there is a progressive dimness throughout the latter portion of the green and the whole of the blue, the visible spectrum terminating entirely about F 50 G. But, in the spectrum of bile,

FIG. 1.



SPECTRUM OF BLOOD.

this gradual fading is absent, and the light is cut off suddenly, making a strong contrast with the complete darkness immediately beyond its limit. This appearance is perceptible in bile of all shades of green, olive, yellow, and reddish-brown.

The third peculiarity of the bile-spectrum is the presence

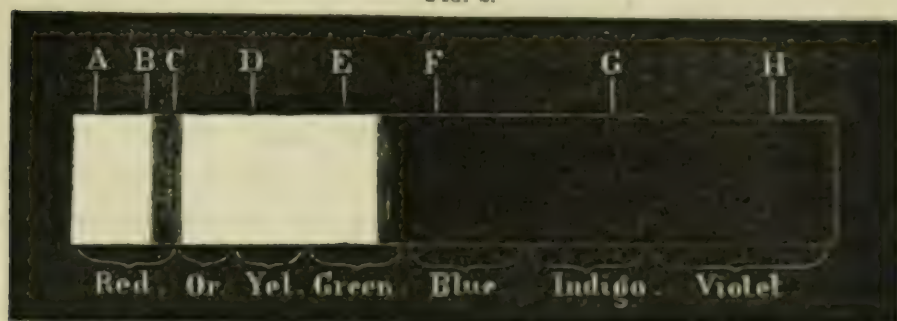
of an *absorption-band in the red*, at the situation of the line C. So far as I am aware, this band has not heretofore been noticed by any of the writers on the subject.¹ And yet, according to my own observations, it is so constant and so well marked as to form a characteristic feature in the spectrum of bile whenever it has a decided greenish tint, and often when it is of a yellowish, reddish, or olive-brown color. In eleven specimens of ox-bile, sheep's bile, and dog's bile, of a green, greenish-olive, olive, or olive-brown color, this band was visible when examined in a thickness of only one centimetre. Usually, however, it requires a layer or two, and sometimes of three centimetres, to bring it out distinctly. In all the nineteen specimens of ox and sheep's bile which had a greenish or olive tint, when viewed in a thickness of two or three centimetres, the band at C was very distinct and often quite dark or almost black. In the three remaining specimens, which were of a yellowish-brown color, without any tinge of green, the band was but faintly visible in layers of three or even four centimetres. In five specimens of dog's bile, of a yellowish-brown or olive-brown color, it was distinct and sometimes very dark in

¹ Since this paper was presented to the Academy, I have met with some observations of Bogomoloff, cited by Fumouze in his work, "*Les Spectres d'Absorption du Sang*," Paris, 1871, page 135, for which I am indebted to Dr. H. G. Piffard. Bogomoloff says that fresh bile presents no absorption-spectra; but that, after being exposed for a time to the air, it becomes acid in reaction, and then shows several bands in succession; the first one appearing to the right of the line D; the second, "after one or two days," to the left of D; later still, *a third at C*; and finally, a fourth at the situation of the line E, the last two being always less distinct than the two others. I have so often seen the band at C very strongly pronounced, in fresh bile, without any other band being visible at the time, that I can hardly think the observations of Bogomoloff and my own refer to the same thing. The appearance in question is certainly not dependent on an acid reaction or any want of freshness of the bile. I have found the C band perfectly distinct in neutral and alkaline sheep's bile, which was examined within an hour, three-quarters of an hour, thirty-seven minutes, half an hour, and in one case within fifteen minutes after the animal was killed and the gall-bladder taken out of the abdomen. In these cases the bile was kept during the interval in the gall-bladder, and was taken out only at the moment of subjecting it to spectroscopic examination; so that there can be no reasonable doubt that this band is a spectroscopic feature of the normal bile, and not a consequence of its change or decomposition.

a layer of two centimetres; and in a sixth it was perceptible in a layer of three centimetres.

In these cases, as a general rule, the intensity of the band at C is in proportion to the preponderance of green in the color of the bile. Though easily seen, in comparatively thin layers, in specimens of a pure green or a decided greenish-olive color, it is less perceptible in specimens of a yellow-

FIG. 2.



SPECTRUM OF GREEN BILE.

ish, yellowish-brown, or olive-brown tint. But if a specimen of reddish or yellowish-brown bile, which does not show the band distinctly, be treated with a few drops of iodine solution until it turns of a decided green, the band at C immediately becomes visible, often in a very marked manner. The same effect is produced by exposing the bile to the air until it assumes a green color. I have observed in this way the appearance or increased intensity of the C band, under treatment with iodine or atmospheric exposure, in nine specimens of ox, sheep, and dog's bile.

It would appear from this result that the C band is probably due to the presence of the green rather than the red coloring matter of the bile. Since the red coloring matter, or bilirubine, is well known to be converted into biliverdine by oxidizing agents, and as this change of color is accompanied by the appearance of the C band, it is difficult to avoid the conclusion that the two are directly connected with each other. At the same time, I have seen the band very dark and distinct on one occasion, in a thickness of one centimetre, in dog's bile which was of a deep olive-brown color; and twice it was faintly visible, in two and three centimetres in specimens which were brownish-yellow. In both the latter

cases, the band became dark and distinct after the bile was turned green by iodine.

The band also disappears from the spectrum of ox-bile when this fluid loses its green tint. If ox-bile, of a pure green or olive-green color, which shows a distinct band at C, be inclosed in a perfectly full and securely stopped vessel, so as to be entirely protected from the air, it gradually loses its color; and at the end of twelve, twenty-four, or thirty-six hours, has become of a light-yellow, or yellowish-brown, without any remaining tinge of green. If examined in this condition, the band at C is no longer visible; and in a series of specimens it becomes indistinct exactly in proportion to the fading away of the green color. After it has completely disappeared, it may be at once restored by again turning the bile green with a solution of iodine.

This change appears to be analogous to that which takes place in blood, when the characteristic absorption-bands of aerated blood disappear after the fluid has been kept for two or three days in a tightly-stopped bottle, and are at once restored by shaking it up with oxygen or atmospheric air. The green tint of the biliary coloring matter, at least in ox-bile and similar varieties, seems to be dependent upon continued oxidation, and to be indicated in this condition by a special absorption-band.

The usual position of the band is at the line C, but extending to a greater distance on its left than on its right side; namely, from B 20 C to C 10 D. In one case, where it was very strong and dark, it extended from B 13 C to C 18 D; and in one or two instances the absorption began at or just beside the line B, thus occupying the entire space between B and C. Its extreme limit, in the opposite direction, was in one case where it extended, in a thickness of three centimetres, from B 30 C to C 25 D. It invariably included the line C, and never passed beyond either of the adjacent lines.

In the eleven specimens of pig's bile which were all of a reddish-orange, yellowish-brown, or ruddy-brown color, I did not find the C band indicated, even in a thickness of three centimetres. In six of the specimens, treatment with iodine produced a green or olive color, after which the band

became visible, though usually quite faint. In the remaining five cases no green or greenish color was developed by the addition of iodine; and there was no appearance of the band at C.

It seems probable therefore, that in pig's bile the principal coloring matters may be different from those in the bile of the other domesticated animals.

With regard to other absorption-bands in the bile, I have seen, in three instances of olive-green, yellowish-brown, and red bile, a very narrow and faint band at D 18 E. There is reason to believe that this was really one of the two absorption-bands of blood, with the first of which it corresponds precisely in situation; the second blood-band being imperceptible owing to its comparative faintness and the termination of the spectrum within or just beyond its limits. In two instances I have met with both blood-bands in the spectrum of bile. One was the case of a woman, who had died of nephritis; the gall-bladder being taken out at the autopsy next day. The filtered bile was of a ruby-red color, and in a layer of one centimetre showed both the absorption-bands of blood, with their normal relations to each other; one narrow and distinct, just beyond D, the other wider and fainter, from D 60 E to E. The last band, however, was not isolated, because the spectrum itself, as not unusual with bile, terminated suddenly at E, thus leaving the band only in the form of a distinct dimness of the latter part of the spectrum.

In the case of a dog, where the gall-bladder was left in the abdomen for several hours after death, the bile also contained blood. It was of a clear claret-red color, and showed both the absorption-bands distinct and isolated. The spectrum ended suddenly, some distance beyond the second band, at E 47 F.

I have found that a similar spectrum may be produced by adding defibrinated blood to fresh dog's bile, in the proportion of one drop of blood to three cubic centimetres of bile. Furthermore, if blood be diluted by successive additions of water, so as to weaken its spectrum, the first absorption-band always remains visible longer than the second. If the dilution be carried to the extent of one part of blood to one thousand parts of water, and the mixture viewed in a thickness of one

centimetre, the first band is still visible, though faint, while the second is entirely imperceptible. In the spectrum of bile, therefore, the occasional faint band at D 18 E is no doubt the first absorption-band of blood, which has been exuded into the gall-bladder during the last hours of life or within a short time after death.

There are also two other bands sometimes to be seen in the spectrum of bile, one situated at D, the other at D 30 E. The first is usually quite imperceptible as a band, existing only in the form of a more or less diffused dimness in the region of the yellow; but sometimes, in an instrument which gives a very short and compressed spectrum, like the Sorby-Browning micro-spectroscope, it shows itself as a dark striation at this point. It may appear in either greenish or yellowish-brown bile. The other absorption-band, namely, that at D 30 E, I have seen, accompanying the C band, in ten specimens of ox and sheep's bile, which nearly all had a greenish or olive tinge.¹ This band, however, like the preceding, is uncertain in its appearance, always quite faint, and often nothing more than a slight indication of the absorption of light in that region. It is never to be compared, for intensity or distinctness, with the band at C, and in my own observations was entirely absent in a considerable portion of the cases examined.

The band at C, accordingly, is the only one which is sufficiently constant and distinct to be regarded practically as a characteristic feature of the spectrum of bile.

Finally, the spectrum of bile, as a general rule, exhibits a remarkable *diminution in quality of the orange and yellow colors*. In the great majority of cases there is but little orange perceptible, and no pure yellow. The place of the orange is occupied by red, which extends farther toward the right than in the normal spectrum; while, in the opposite direction, the yellow is encroached upon by the green. Between these two, in the situation of the pure yellow, there is a perceptible diffused dimness; and it is this dimness which sometimes assumes the appearance of a faint absorption-band at the line

¹ This is probably the first band mentioned by Bogomoloff as appearing in bile during its alteration by exposure to the air.

D. Very often, however, even when there is no distinct band at this point, the pure yellow is entirely wanting; and in not a few cases the orange is also deficient, while the spectrum terminates as usual before the commencement of the blue, so that the only colors really visible in the spectrum are red and green. Even the green has a bluish tint, in comparison with that of the normal spectrum. This peculiarity in the spectrum of bile shows itself, whether the color of the specimen be greenish or yellowish-brown.

II. The well-known reaction of Pettenkofer's test for the biliary salts, which has now been in use for thirty years, is one of the most striking and elegant of all those employed in physiological chemistry. If the bile, or a solution of either glycocholate or taurocholate of soda, be treated with a small quantity of sugar and pure sulphuric acid in excess, a violet-red color is produced which is very distinctive. As the fresh bile, however, contains other organic matters which are liable to interfere with the purity of the reaction, it is indispensable, in delicate examinations, first to evaporate the bile to dryness, extract the dry residue with absolute alcohol, and then to precipitate the alcoholic solution with ether in excess—when the biliary salts separate from the solution and soon take the form of an abundant crystallization.

A clear and colorless watery solution of the biliary salts, thus purified, is used for the test. Only a small quantity of sugar is added, because if it were abundant a discoloration might be produced by its own reaction with the sulphuric acid. One part of cane sugar, dissolved in four parts of water, makes a convenient solution for ordinary use. Of this saccharine liquid, one drop is added to each cubic centimetre of the solution of biliary salts. This produces at first no visible change. On adding a few drops of sulphuric acid, the acids of the biliary salts are decomposed, and cholic acid is precipitated, forming in the solution a white cloudiness. This is redissolved on increased addition of sulphuric acid, the liquid becoming clear, with the development of minute bubbles of gas. Soon afterward there appears a pink or cherry-red color,

which gradually deepens into a ruby-red, a violet, and finally, if the biliary salts were abundant, a deep opaque purple. If the solution be very dilute, the violet color, which is the essential feature of the reaction, may not be fully developed under five or six hours.

The value of this reaction has been thought to be impaired from the fact that a similar tint may be produced by Pettenkofer's test with certain other substances besides the biliary salts. Oleine, oleic acid, ethereal oil, amyl-alcohol, albuminous matters, and more recently¹ morphine and codeine, have all been mentioned as possessing this property. Of these substances, however, the only ones which give a reaction liable to be mistaken for that of the biliary salts are albumen and the opium alkaloids. Serum of blood, treated with Pettenkofer's test, gives a ruby-red fluid which soon acquires a violet tint, and in the course of twenty-four hours becomes a deep purple. Even when diluted with ten times its volume of water, it will give, in half an hour after the application of the test, a bright, clear, ruby-red fluid. Pure white of egg, treated in the same way, at once shows a clear ruddy color, and in the course of an hour acquires a distinct violet tinge.

Both codeine and morphine exhibit a similar reaction in a solution of ten or more parts per thousand. On the addition of sugar and sulphuric acid, a nearly clear pink color, with more or less of a violet shade, is rapidly produced, which soon becomes a strong cherry-red, and, after some hours, a purple-red. The similarity of colors is most striking in the case of codeine, which may produce at the end of twelve hours a deep purple fluid, entirely undistinguishable from that caused by the ingredients of the bile.

These facts, however, do not altogether invalidate Pettenkofer's reaction as a test for the biliary salts. They would do so, if we applied the test directly to the bile or to animal fluids supposed to contain it. But this is never done. If the fluid be first evaporated, extracted with alcohol, precipitated with ether, and the precipitate dissolved in water before applying the test, most of the above substances will be excluded.

¹ Poggendorf's "Annalen," 1872, No. 9, page 128.

Codeine is soluble in ether, and is not precipitated by it from its solution in alcohol. Albuminous matters could not be extracted by absolute-alcohol from the dry residue, and neither oleine, oleic acid, amyl-alcohol, nor ethereal oil, could be precipitated by ether from the alcoholic solution, nor dissolved in water afterward. So far as these substances are concerned, no mistake can arise if the test be thoroughly carried out.

The salts of morphine, however, so far as I am aware, present an insuperable difficulty. They are soluble in water and in alcohol, and may be precipitated by ether from an alcoholic solution, very much in the same way as the biliary salts. After this precipitation, they may be dissolved in water, and will then give a red color with sugar and sulphuric acid. The coincidence is still more striking from the fact that the colored fluid thus produced, by both morphine and codeine, gives a *spectrum* so similar to that of the biliary salts that no certain distinction can be made between them, except that in the spectrum from biliary salts the peculiar characters are much more strongly marked than in that from morphine and codeine. Morphine, however, is of course not liable to be present in purely physiological investigations upon the fluids of animals. Albuminous matters are the only ones occurring as ingredients of the body which could possibly give rise to error; and these, as we have seen above, are excluded by the usual preliminaries of the test.

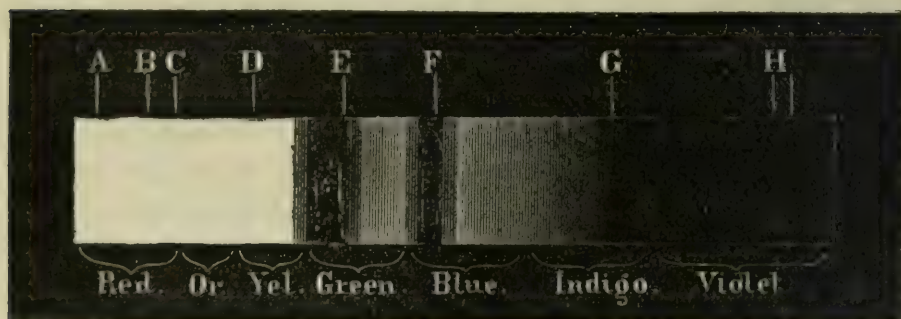
The spectrum of Pettenkofer's test is interesting, as affording an additional means of identifying it in certain cases, should doubt arise. Dr. S. L. Schenk,¹ of the Physiological Institute at Vienna, has published, within the past year, some observations on this subject. He operated with alcoholic solutions of pure glycocholate and taurocholate of soda, obtained from Merck's laboratory in Darmstadt, and found that these substances, treated by Pettenkofer's test, yielded a spectrum with two characteristic absorption-bands, situated, the one at E, the other at F.

I have also found these bands to exist in the spectrum of Pettenkofer's test, when carried out in the manner adopted by Dr. Schenk. I obtained the pure sodium glycocholate

¹ "Anatomisch-physiologische Untersuchungen," Wien, 1873.

and taurocholate from Merck's laboratory, and applied Pettenkofer's test to these salts in alcoholic solution. The sodium glycocholate, dissolved in alcohol in the proportion of 100 milligrammes to the cubic centimetre, gives, with sugar and sulphuric acid, a deep opaque purple fluid, which, in a suitable grade of dilution, shows in the spectroscopie two wide and dark absorption-bands: one at E, extending from D 50 E to E 25 F: the other at F, from E 60 F to F 15 G, the spectrum terminating gradually about the line G. The sodium taurocholate, under similar circumstances, forms a deep violet-red fluid, and gives a spectrum with the same two bands at E and F, in exactly the same situations and with the same characters as in the former case.

FIG. 3.



SPECTRUM OF PETTENKOFER'S TEST WITH THE BILIARY SALTS IN ALCOHOLIC SOLUTION.

There is also frequently to be seen a band at D, which is, however, narrow and faint, and not at all to be compared for distinctness with the two others. This band is mentioned by Dr. Schenk as having been seen by Bogomoloff, though he himself did not find it. It certainly exists in many cases, but it is by no means constant.

If dried ox-bile be extracted with absolute alcohol, the alcoholic solution precipitated with ether and allowed to stand until crystallization takes place, the mixture of ether poured off, and the crystalline deposit then dissolved in alcohol and treated with Pettenkofer's test, this fluid also has a spectrum in which the E and F bands are visible, and often, also, the band at D. They vary somewhat in different specimens, the E band being usually the widest and darkest of the three. Sometimes, however, the two bands at E and F are of equal

intensity, while that at D is always comparatively faint, and often imperceptible.

When the biliary salts, used for Pettenkofer's test, are dissolved in alcohol, as in the foregoing experiments, the color of the fluid produced is less pure and bright than when water is employed as the solvent. There is also more opacity, in proportion to the amount of color present; and, consequently, the spectrum is comparatively dim, and the absorption-bands less distinct than with a watery solution.

But when Pettenkofer's test is applied to a watery solution of the biliary salts sufficiently concentrated to give a distinct violet or purple color, the fluid produced is too opaque for spectroscopic examination, and consequently requires to be diluted. If water, however, be added to it, there is immediately formed a whitish turbidity, and the purple color disappears. This difficulty does not present itself with an alcoholic solution, which may be diluted to any degree by the addition of alcohol, without exhibiting any turbidity or losing its color. It was for this reason that alcohol was employed as the solvent in the experiments of Dr. Schenk.

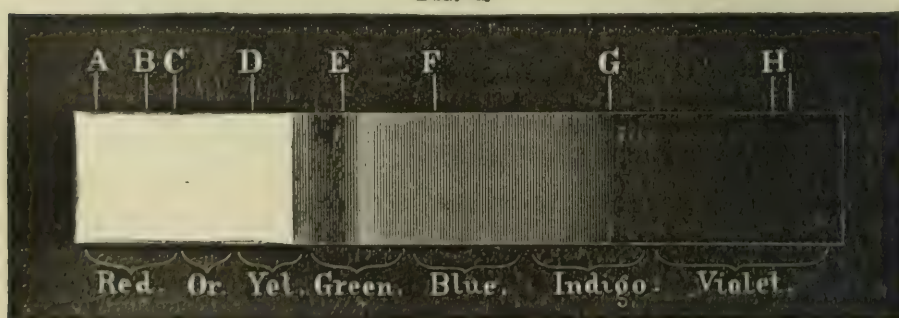
It is not necessary, however, to use alcohol for this purpose. If we dilute the watery solution after treatment by Pettenkofer's test, it is true that this produces a turbidity and decolorization, as above described; but the turbidity can be easily cleared up again, and the color restored, by a further addition of sulphuric acid. This method, which was suggested by one of my assistants, Mr. Geo. A. Spalding, I have always found to be perfectly successful. In this way the watery solution may be diluted at pleasure, and its color and transparency restored without difficulty.

It is not even indispensable to resort to this treatment, in order to secure a clear and transparent fluid for spectroscopic examination, provided the solution be made at first sufficiently dilute. If pure sodium glycocholate be dissolved in water in the proportion of one part to 500, and the solution treated with Pettenkofer's test, it gives in a few moments a clear violet-pink color, which afterward becomes a rich purple. This fluid is so opaque that, when placed before the slit of the spectroscope in a layer of one centimetre, it extinguishes

completely every thing but the red; and yet it may be diluted with water without showing any turbidity or losing its color. A watery solution of this strength is, therefore, amply sufficient to exhibit the reaction of Pettenkofer's test, and the spectroscopic appearances belonging to it; and it does not require to be corrected, after dilution, by the addition of sulphuric acid.

In many repeated observations, I have found that it makes a very decided difference in the spectrum of Pettenkofer's test whether alcohol or water be used as the solvent fluid. With the alcoholic solution there are two bands, at E and F, as already described. With the watery solution, there is only one. If the pure sodium salts of either glycocholic or taurocholic acid, in watery solution, be treated with Pettenkofer's test, the spectrum shows only the absorption-band at E. This band, in a fluid of the requisite degree of strength, is very dark and tolerably well defined, extending usually from D 50 E to E 25 F. Its limits are of course farther extended by increasing the thickness of the layer of the fluid under observation. Beyond the band, the spectrum is comparatively dim, and ends gradually toward the situation of the line G.

FIG. 4.



SPECTRUM OF PETTENKOEFER'S TEST WITH THE BILIARY SALTS IN WATERY SOLUTION.

A similar appearance is produced if the biliary salts of dried ox-bile be crystallized by extraction with alcohol and precipitation with ether. The same biliary salts, obtained in this way, if dissolved in alcohol, will give a spectrum with the two bands at E and F, and, if dissolved in water, will give only the band at E.

In some instances I have found that the violet-pink fluid, which at first gave only the band at E, became, after standing

for twenty-four hours, somewhat turbid and dingy in color, and then showed the two absorption-bands, both rather indistinctly. But, on being again treated with sulphuric acid, it resumed its former transparency and color, and at the same time again showed only the band at E, which was perfectly distinct; the other having disappeared. A watery solution, also, which shows only the E band, if diluted with alcohol instead of water, will at once give indication, more or less distinct, of the band at F. I cannot help considering, therefore, the band at E as the only characteristic feature in the spectrum of a watery solution of the biliary salts, when treated with Pettenkofer's test.

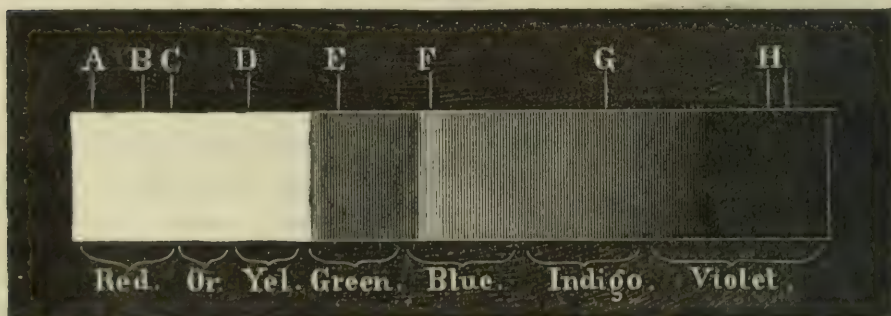
My own observations agree with those of Dr. Schenk as to there being no difference in the spectrum produced, whether we use the salts of glycocholic or of taurocholic acid. In point of fact, the first step in applying Pettenkofer's test, that is, the addition of sulphuric acid, converts both these substances into cholic acid, and the purple color which finally appears is really formed in each case by cholic acid, which may thus be derived from either or both of the original biliary salts.

The pink and purplish-red fluid, produced by Pettenkofer's test with both codeine and morphine, has a spectrum very similar to that of the biliary salts. If the ruddy color of the fluid be strongly pronounced, its spectrum, even when viewed in a layer of one centimetre, is very short, terminating completely about midway between D and E, or even before that point, showing the red and yellow clear and bright, but very little of the green. If diluted with water, the mixture is not rendered turbid, but its color is very much reduced, being soon changed to a faint amber or often to a light apple-green, while the former peculiarities of the spectrum disappear. The best way is to place the fluid before the slit of the spectroscope in a layer of two centimetres before its color is fully developed, and while it is still of a light pink. The color then gradually becomes more pronounced, and, when it has attained the proper degree of strength, the spectrum exhibits a certain though ill-defined absorption-band at E, extending from about D 50 E to E 25 F. Beyond the band the whole spectrum is very dim, and terminates gradually between F and G.

The distinction between the spectrum of Pettenkofer's test with biliary salts and that with the opium alkaloids is, that in the former case the absorption-band at E is very marked and distinct, and often quite black, when viewed in a layer of two centimetres' thickness, while in the latter it is always dim and very ill-defined. With the biliary salts also, the fluid may frequently be diluted with its own or even twice its volume of water, and the absorption-band still remain plainly visible; but with morphine or codeine a very moderate dilution rapidly destroys the character of the spectrum and causes the absorption-band to disappear.

The violet-colored fluid produced by Pettenkofer's test with albumen has a well-marked and peculiar spectrum, easily distinguishable from that belonging to the biliary salts. If tolerably dense, it requires to be diluted with water for spectroscopic examination, and afterward cleared up by the further addition of sulphuric acid. The spectrum then shows a single absorption-band, extending from somewhere about the line E to the line F, and occupying the intermediate space. In

FIG. 5.



SPECTRUM OF PETTENKOFER'S TEST WITH ALBUMEN.

concentrated specimens it may begin so far toward the left as D 65 E and extend thence to F. If the albuminous liquid be more dilute, it may reach only from E 24 F to F. It is therefore always limited on the right by the line F, but extends farther and farther toward E and D, according to the degree of the concentration of the liquid. Its edges are not very well defined, but are more distinct when the band is narrow than when it is wide. Beyond the band the refrangible portion of the spectrum is quite dim.

Finally, it would be desirable to know in what degree Pettenkofer's test is reliable for detecting small quantities of

the biliary salts, and whether spectroscopic examination be capable of increasing the delicacy of the test.

Merck's pure sodium glycocholate, dissolved in water in the proportion of one part to fifty, and treated with Pettenkofer's test, makes at once a fluid of a clear violet-pink color, passing rapidly into a strong ruby red, the spectrum of which shows the absorption-band at E excessively wide and black, when viewed in a thickness of one centimetre.

The same substance, dissolved in 500 parts of water, makes, in a few moments after application of the test, a clear violet-pink fluid, in which the absorption-band at E is distinct though not very strong; but after standing for an hour it is of too opaque a purple to be examined without dilution, and when properly reduced shows the E band distinctly.

Dissolved in 1,000 parts of water, it readily yields a clear violet-pink fluid which, in a layer of one centimetre, shows the E band with perfect distinctness.

Dissolved in 2,000 parts of water, it changes color very slowly after the application of the test, but at the end of fifteen minutes becomes a clear violet-pink, and shows the E band distinctly in layers of one centimetre.

Dissolved in 3,000 parts of water and treated with Pettenkofer's test, it acquires slowly a very dilute, clear, pinkish-amber tinge, and shows only faint indication of the E band in a layer of two centimetres' thickness. After standing for an hour, it has a distinct cherry-red color, with a tinge of violet; and in this condition, if viewed in a layer of two centimetres, the E band is plainly visible, but too faint and ill-defined to be serviceable as a test.

With the sodium taurocholate the sensibility of Pettenkofer's test is greater still. If this salt be dissolved in 1,000 parts of water and the test applied, it produces immediately a light violet-pink fluid, in which the E band is distinctly visible; but after standing for an hour it is of a fine clear violet, and the E band is very strong and black, in layers of one centimetre.

If dissolved in 3,000 parts of water it assumes, in fifteen minutes after the application of the test, a light, clear cherry-red color, which afterward has a tinge of violet, and, in a layer of two centimetres, shows the E band distinctly.

In higher degrees of dilution it fails to respond to the test. If dissolved in 5,000 parts of water, the fluid assumes slowly an almost imperceptible rosy tint, which is not altered even after standing for six hours, and shows no visible absorption-band in a layer of two centimetres' thickness.

With both the glycocholate and taurocholate, if dissolved in alcohol, the reaction of Pettenkofer's test is perceptibly less delicate than when employed in a watery solution. The colors produced are less clear and the absorption-bands less distinct.

Sodium glycocholate, therefore, may be detected by Pettenkofer's test, in a watery solution of one part to two thousand, and the taurocholate in a solution of one part to three thousand, if the test be applied with care. The spectroscopic examination of the fluid is useful in identifying the reaction as due to the presence of the biliary salts, but it does not perceptibly increase the delicacy of the test. The characteristic absorption-bands are more or less marked, according to the strength and purity of the red or violet color to the eye; and at every successive degree of dilution they become faint and ill-defined, exactly in proportion as the fluid itself loses its distinctive coloration. I do not think we could ever detect the presence of the biliary salts by spectroscopic examination, in a fluid which did not show any distinct ruby or violet color.

The results of the preceding observations may be stated as follows:

I. The spectrum of bile is characterized, as a general rule, by an absorption-band at C.

II. The existence and intensity of this band are proportional to the predominance of green in the color of the bile.

III. The spectrum of the bile is also distinguished by a diminution or absence of the orange and yellow, and a corresponding extension of the red and green.

IV. There are sometimes also two other absorption-bands, comparatively uncertain and ill-defined, at D and at D 30 E.

V. The pure biliary salts in alcoholic solution, treated by Pettenkofer's test, give a spectrum with absorption-bands at E and F.

VI. In a watery solution, treated by the same test, they give a spectrum with but one absorption-band, namely, at E.

Clinical Records from Private and Hospital Practice.

I.—*Three Cases of Ear-Disease.* By THOMAS R. POOLEY, M. D., of New York, Assistant Surgeon to the New York Ophthalmic and Aural Institute; Ophthalmic and Aural Surgeon to Charity Hospital.

CASE I. *Disease of the Middle Ear and Mastoid Cells, extending to the Brain; Death.*—Annie Fitzgerald, aged fifteen, born in the United States, of Irish parents; admitted to the St. John's Riverside Hospital January 25, 1873. Her present troubles date back to an attack of scarlet fever, which occurred in early childhood, twelve years ago. While convalescing from the fever, she had a severe inflammation of both ears, followed by a profuse and ill-smelling discharge, which has continued more or less constantly ever since; sometimes subsiding almost wholly for weeks or months at a time, and then reappearing. Three years since she had an inflammatory swelling behind the left ear, which opened spontaneously, and discharged for a long time; the mother says no pieces of bone were ever observed to come from it. The situation of this swelling over the mastoid is at present memorialized by the presence of a small irregular cicatrix, firmly adherent to the bone. About one year ago, a large piece of bone was removed from the external auditory meatus. The auditory canal on this side is occluded just inside the orifice, by a firm globular tumor, covered by common integument of normal, healthy appearance, which, when touched with a probe, glides easily over a hard substance beneath it, probably an exostosis from the bony wall of the auditory canal. On this side she cannot hear the watch, even when firmly pressed against the ear. Loud voice is heard at 1'. The right ear is the seat of an otitis media purulenta. The membrana tympani is absent, and a large polypus projecting into the auditory canal; otorrhoea not very profuse. Hears the watch only on contact, and loud voice at 3'. She has no pain, but is very much disturbed by noises in the ear. She has a more stupid, depressed look than is usual even with very deaf people, though her features, which are good, exhibit no lack of intelligence. She at-

tended some time, about two months, as an out-patient in the dispensary connected with the hospital, under my brother's care. The polypus was removed with Wilde's snare, and the discharge diminished. A boggy, ill-defined swelling now made its appearance over the right mastoid process, with pain in the head, vomiting, and fever. She was now admitted as an in-patient, and I was sent for to perforate the mastoid process; but her mother, who insisted on being present, became alarmed at the preparations, and in spite of all our persuasions took her away.

She was now put under the care of a homœopathic practitioner, and our further knowledge of the case is derived only from vague report. Her head-symptoms became slowly worse and worse, pain intense, and latterly convulsions, and she died about three weeks after leaving the hospital.

The next case occurred in the practice of my brother, and to him I am indebted for the following history:

CASE II. *Mastoid Disease; Operation; Recovery.*—William Lahey, aged eighteen, born in Ireland; admitted to St. John's Riverside Hospital April 25, 1873. Patient is a laborer; muscular, well-developed man; no hereditary disease known in his family; has been in the habit of using intoxicating drinks and smoking to excess. His general health has always been good previous to the advent of the present attack, which made its appearance March 20th, about one month before his admission to the hospital. That night he perspired very profusely, and, on waking in the morning, he noticed a blowing sound in the right ear; upon getting out of bed, he had a well-marked chill, which lasted for some time.

The noise complained of in his ear, meanwhile, continued without cessation or diminution; and pain commenced three days later, at first in the ear, then spreading thence, until it involved the whole head; he endured it, however, uncomplainingly, for a whole week, when its severity forced him to desist from work. The pain was now so severe that he got scarcely a moment's ease or sleep; his appetite was gone, and his strength sensibly diminished. April 16th, he applied to Dr. Balch for relief from the pain in his head, but at this time he did not complain of his ear until questioned on the

subject. His general appearance was remarkably dull and stupid, with a pale and anxious look ; there was no sickness at the stomach. Examination showed the meatus so closed by swelling of the integument, that the membrana tympani could not be seen.

There was great tenderness about the ear, particularly over the mastoid process. General surface dry and hot ; tongue slightly furred. Hearing-distance of left ear normal, with the right could hear the watch only on contact. The ear was syringed, and some epidermic scales removed.

He was admitted to the hospital April 25th, nine days after being first seen by Dr. Balch.

On admission, his condition was very much as above described. His aspect was almost idiotic ; he was quite pale ; hearing power of the right ear totally abolished ; the whole mastoid region was swollen, puffy, red, and excessively tender. Next morning, April 26th, he was etherized, and an incision an inch and a half long made over the mastoid process, completely down to the bone. Upon incising the periosteum a few drops of pus made their appearance.

So much were the parts thickened and altered by the inflammatory process that the incision required considerable force, and was fully an inch in depth. The bleeding was considerable, but not excessive. The bone was found to be rough and eroded, and an opening was made into the mastoid antrum with a trocar, and enlarged with a small gouge ; two drachms of pus were thus evacuated. The bony partition of several of the neighboring cells was found broken down, and formed with the antrum a considerable cavity. A few threads of long lint were introduced into the osseous cavity, the external wound filled with picked lint, and a large flax-seed-poultice applied.

27th.—The change in the appearance of the patient this morning is most striking and remarkable. He is sitting up in bed, looking quite bright and cheerful, and in warm terms expresses his gratitude for what has been done for him. His pain is entirely gone, except what little is referable to the wound. Hears the watch at one inch from the ear ; wound looks healthy, and, on requesting him to inflate the middle ear

by Valsalva's method, the air can be heard bubbling through the opening in the mastoid process.

28th.—Very much improved; no pain; wound healthy; hearing-distance 4"; appetite improving.

29th. — Continued improvement; wound suppurating healthily; hearing-distance 6"; membrana tympani cannot be seen, as there is still some swelling of the meatus.

May 3d. — Continues to improve; hearing-distance for watch, 14"; tent no longer inserted into the bone; wound granulating rapidly.

11th.—Has continued steadily to improve since last report; wound nearly well; hearing-distance normal; membrana tympani, which can now be inspected, looks quite normal. Discharged cured May 12th.

CASE III. *Purulent Otitis Media in a Young Child, followed by Convulsions and Death; Post mortem.*—F. H., aged two years and nine months. In February, 1873, had measles and whooping-cough, from which he convalesced slowly, and was considerably emaciated. There were no symptoms of ear-disease until April, when the mother first noticed a discharge from the ears, and facial paralysis ensued about one week before Dr. Balch saw the patient. When the case came under his care (May 13th), there were facial paralysis of the right side and otorrhœa from the right ear. The child was extremely emaciated, but did not seem to suffer pain; its mother said, however, that it had shown evidences of pain in the head. The child had a stupid, listless aspect, and seemed devoid of intellect. Otorrhœa continued profuse, emaciation to increase, pain to be more severe, and the child was at times unconscious.

June 5th.—The child died after being in convulsions for two hours. An autopsy was made by Dr. Balch eleven hours after death. There were evidences of a pretty general meningitis, with effusion of serum under the membranes. The meninges corresponding to the diseased portion of right temporal bone were thickened and infiltrated. The right temporal bone was removed, and I am indebted to Dr. Balch for the opportunity of examining it. The specimen was put in Müller's fluid and examined January 3, 1874, by Dr. F. A. Munson, to whom I gave it for dissection. The following is his report:

"Both surfaces of the squamous portion of the temporal bone, including the mastoid process, are normal. For the space of $\frac{1}{2}$ " above and posterior to the external meatus, limited by the posterior part of the temporal ridge, the surface presents several capillary openings, only a few of which appear to communicate with the mastoid cells, as indicated by the bristles.

"The bony part of the external meatus is roughened and partly carious, including the edge of the auditory process, and inner (or posterior) edge of the middle root of the zygoma. The membrana tympani is entirely absent. The whole middle ear is filled with a yellowish material of a plastic consistency, which the microscope shows to be *pus*. After its removal with a blunt needle and brush, the ossicles are found *in situ*, they having been completely impacted.

"The anterior wall of the tympanum was then removed by cutting parallel to the Glaserian fissure. This act not affording a sufficiently clear view, a small additional piece was removed in the same manner, completely exposing the canal for the Eustachian tube, as well as that for the tensor tympani. The upper part of the former contained *pus*, in the same condition as in the tympanum. There was no apparent roughness of the thin bony partition separating the carotid canal.

"There was no evidence of what might have been a tensor muscle; the canal for it was filled with *pus*.

"The *processus cochleariformis* is smooth, although the bone just above it is distinctly carious.

"The inner surface of the vaginal process (anterior wall of tympanum) was roughened, and had suffered loss of substance for from 4" to 5", as can be seen, by following one edge of the Glaserian fissure. A small foramen is noticed in the vaginal process. Externally, the petrous bone appears perfectly normal, its incomplete union with the mastoid marked, but the contiguous edges do not seem roughened.

"*Meatus auditorius internus* contains the seventh pair of nerves, and is perfectly smooth, as are likewise the canals of the carotid artery and the jugular vein. The facial nerve at the stylo-mastoid foramen is *in situ*. A section was made through the mastoid process and the contents of the cell ex-

amined: result, pus. After removing the contents of the middle ear, including the ossicula, the promontory, foramen rotundum, and ovale, are observed in good condition. The latter, after removing the stapes, still retained its membrane unruptured at its centre. A probe was easily passed into the antrum mastoideum, and indicated what the section afterward revealed. The antrum was opened into by separating the petrous from the squamous bone in the line of ossification; it was impacted with pus.

“ *The ossicles.*—The malleus is perfect except that the processus gracilis is wanting. The articulating surface of the head of the stapes is depressed and roughened. The long process of the incus is shortened more than one-half, and its end pointed and split. The short process is roughened and completely perforated at its junction with the body. There is nothing recognizable as the chorda tympani.

“ The vestibule of the labyrinth was opened by a cut directed from the posterior margin of the foramen ovale to the corresponding margin of the meatus auditorius internus. The superior semicircular canal was also opened from the prominence marking its situation on the anterior external part of the petrous bone. The membranous semicircular canal, together with the utriculus of the vestibule, was examined microscopically, the former being compared with a preparation made at the same time from a healthy ear preserved in Müller's fluid. They corresponded as nearly as could be expected. No pus or other signs of inflammation were found. A section was then made through the cochlear in a line extending from the middle of the promontory to the internal meatus. A portion was removed from the aperture of the cochlear, and examined; no pus was found. The exudation upon the under surface and in the tissue of the dura mater was of a fibrillated character.”

These cases illustrate the evil results which may follow suppurative disease of the middle ear and of the mastoid cells by extension of the inflammatory process to the brain.

The favorable result of the second case, in which trephining of the mastoid was performed, as contrasted with the first where it was refused, although the only hope left to the poor girl, is very striking. It is true that the prognosis in her case,

even though the operation had been performed, would have been less favorable than in the second case, and yet the indications for its performance were just as urgent, and might have been followed by an equally good result. The fatal termination of the one case and the rapid recovery of the other are certainly instructive. Another interesting feature of Case I. was the closure of the external auditory canal by exostosis. This was no doubt due to long-continued suppuration. It is now an acknowledged fact that inflammatory or acquired exostoses of the auditory canal arise in the course of long-continued suppuration of the middle ear. That local irritation and inflammation of the periosteum and enlargement of the bone were the cause of such a formation in this case was shown by the scar behind the ear, and in the fact that dead bone had been removed from the meatus. Cases in which exostoses completely close the canal are rare.

In Case II., which was one of acute inflammation of the middle ear without rupture of the membrana tympani, the rapid extension of the disease to the mastoid is worthy of notice. Mastoid complications are of far more frequent occurrence in chronic suppuration, in an acute affection, as in this case the inflammatory process extends to the periosteum, which may go on to rapid destruction of the bone.

It is possible, indeed, in this case, that a free incision through the periosteum might have obviated the necessity of perforating the bone.

Case III. is of interest only on account of the careful examination of the temporal bone, by Dr. Munson, the clinical and *post-mortem* history being both too meagre to give it any value.

The examination, however, failed to show the channel of communication through which the inflammatory process extended to the brain. This may have been through the tegmen tympani; or the cerebral disease may have been caused by thrombosis of the transverse sinus. The most interesting fact discovered by the examination was the necrosis of the two ossicles, especially of the stapes, a condition which has, however, been noticed by Toynbee and Moos. In concluding this desultory account of these cases, I would only urge upon the practitioner the importance of recognizing and treating mastoid diseases.

II.—*Case of Novel Disease of the Penis.* By ISAAC SMITH, M. D., Fall River, Mass.

[WE are indebted to Dr. Wm. H. Van Buren for the following case, which was reported to him by Dr. Smith, and which is of interest as an additional case of a rare disease:]

Before reading the article in the April No. of the NEW YORK MEDICAL JOURNAL, on "A Novel Disease of the Penis," by Drs. Wm. H. Van Buren and E. L. Keyes, I thought I had found something new under the sun, but that article set me at rest regarding the diagnosis of the following case:

Mr. H., aged forty-eight years, applied to me to treat him for partial impotence, and incidentally called my attention to a circumscribed inflammation upon the left side of the penis, about an inch from the body, which he thought might perhaps have some connection with his loss of power. The enlargement was one inch in length, parallel with the penis, and three-quarters of an inch broad, causing but slight inclination of the penis during erection. He was unable to assign any cause for the "bunch." No pain accompanied it at any time, nor is any caused by pressure. He presented no evidence or history of venereal contamination, past or present. His temperament is nervous; and he seems to be in about his usual health, except the impotence. He is a married man, with family. This case seems to be identical with those described in the article above referred to. He had never been under the care of a physician, nor had he taken any medicine, or adopted any measures to relieve the impotence.

Notes of Hospital Practice.

BELLEVUE HOSPITAL, NEW YORK.

SURGICAL DIVISION.

Fracture of Neck of the Scapula.—An interesting and rare case of fracture of the neck of the scapula is at present under treatment. The patient said he fell on his shoulder shortly before coming into hospital. When it was examined, the characteristic signs of this injury were apparent, viz., sagging

down of the shoulder on the affected side, without dislocation of the shoulder-joint or fracture of clavicle or humerus. The patient had been the subject of intemperance, and, shortly after admission to the ward, manifested delirium tremens. In the mean time the shoulder had been put up in plaster-of-Paris dressing by the house-surgeon, Dr. J. H. Hunt, and was doing very well, but in his delirium the patient escaped from the hospital building and again injured it. It was again put in plaster-dressing, and kept so for six weeks, when the dressings were removed, and it was found that not even ligamentous union had taken place, the crepitus being quite distinct. It was put up for the third time in plaster-of-Paris dressing, and continues so for the present.

Fracture of Ulna and Radius; Gangrene.—A boy was admitted into the hospital with a fracture of radius and ulna about the middle third, and the fingers in a gangrenous condition. The following sad history accompanied the case:

Shortly after the injury, a medical man was called to see him, and covered the fractured arm with a bandage; outside of this splints were applied. Instructions were left with the patient to cut the bandage if it became too tight. During the succeeding night he suffered severe pain, but did not obey the instructions. When seen by the surgeon next day, discoloration was discoverable on the fingers. Another surgeon was called in, and advised fomentations, but the bandage was re-applied. On the third day he entered hospital with a superficial line of demarcation at the middle of the metacarpal bone. Shortly after, the deep line occurred at the metacarpophalangeal articulation. The only local treatment was the continuous use of warm-water fomentations, and under this he improved, the redness and swelling disappearing. A slough now appeared over the site of the fracture and communicated with it. Shortly afterward he sank and died.

The case is of great importance, in showing the danger that exists when a bandage is applied directly to the skin in a case of fracture, and the marked necessity there is to watch the case attentively for a few days after the injury.

Meningitis; Recovery.—The patient is about thirty years of age, and a bar-tender by occupation. He was transferred to

this hospital from a reception hospital three weeks after being hit on the head with a club. On admission here, was suffering from pain in the frontal region. Had delirium, but at times there were lucid intervals. There was a marked difference in the pupils, and even at present this may be noticed occasionally. The pulse at first was rapid, but soon sank to 60 and 70 per minute.

The treatment consisted in having the head shaved, ice applied, and a purgative administered. Iodide of potassium was given, five grains three times a day, but was soon increased to twenty-five grains three times a day. At present he is convalescent.

MEDICAL DIVISION.

Pyo-Nephrosis.—On the 17th of February a patient entered the service of Dr. Loomis, with the following history: He was thirty-six years of age, and had always been in good health. Three years previous had an attack of renal calculus, followed in two years by a tumor in the lumbar region, about the size of the fist. No pain accompanied this, except on exercise. Two weeks before admission, this tumor increased rapidly in size, and, when he was examined on entering, it was found to be on the right side, and extended from the median line in front to the lumbar region posteriorly. It was ovoid in appearance, and gave evidences of fluctuation behind. The urine was albuminous, and contained hyaline casts. The feces did not present the character of malignant disease. On the 27th of March the needle of the aspirator was introduced two inches above the crest of the ilium, and some pus was withdrawn; but the tumor soon regained its normal size. The temperature of the case never passed over 100°, and the pulse rarely 96.

Dr. Loomis called a consultation of surgeons, and it was decided to operate. An incision was made two inches above the crest of the ilium, and the sac entered. The operation was similar to that of lumbar colotomy. Forty ounces of pus were evacuated, after which a drainage-tube was introduced and retained.

CHARITY HOSPITAL, NEW YORK.

SURGICAL DIVISION.

Sinuses connecting with the Ischio-Rectal Fossa.—There is at present a patient under Dr. Erskine Mason's care, in whom an ischio-rectal abscess pursued the unusual course of opening, not only into the rectum, but also on the right side between the adductor muscles. It was found that this sinus was connected with the tuberosity of the ischium, and the tuberosity itself was the seat of carious disease.

Treatment.—It was hoped at first that it might be possible to cure the case by dilating the sinuses; this, however, failed. They were then laid open, and lint-dressings applied, so as to allow them to heal from the bottom.

Ulceration of Rectum; Treatment.—It is the experience in this hospital that in ulceration of the rectum, whether it be venereal, the result of stricture, or any other cause, the application of iodoform is of more benefit than any other agent in hastening a cure and relieving pain. It may be either used in solution or as a suppository. The solution is made by adding from half a drachm to a drachm of iodoform to two ounces of glycerine, and half an ounce used at a time. The suppositories are formed from butter of cacao, each suppository containing five grains of iodoform. Before using it, evacuate the bowels by means of a purgative or enema, then apply the iodoform at night.

Perineal Lithotrity.—The patient was a man, aged thirty-five years, the subject of hemiplegia for the past year and a half. During the last year complained of severe pain in passing his water, being most intense at the end of micturition. For six months has had incontinence. While in the medical division under treatment, a calculus was detected accidentally while passing an instrument into the bladder. When it was first noticed it was situated in the neck, but, after washing out the viscus, it fell back into the *bas fond*.

Dr. Joseph W. Howe, who had charge of the case, performed what was essentially Dolbeau's operation of perineal lithotrity, with this exception, that, instead of dilating the

neck of the bladder with Dolbeau's instrument he used his fingers only. This operation differs from Allarton's median operation only in dilating instead of cutting the neck. The stone was found to be phosphatic, of large size, an inch and a half in one diameter, and easily crushed by the forceps. The detritus was removed by washing out the bladder with a Davidson's syringe. The morning after the operation the patient passed some water through his urethra, and in three weeks the wound was entirely healed. No pain in passing water was afterward experienced by the patient.

VENEREAL DIVISION.

Chancroids.—After the sore has been cauterized by pure nitric acid, or the actual cautery, iodoform proves to be one of the most satisfactory applications.

In chancroids of a chronic nature, where the sores have a whitish look, resembling a diphtheritic exudation, bromide has proved to be a most serviceable agent. The method of application is to brush a solution over them two or three times a day. The solution is made by adding half a drachm of Squibb's solution of bromine to an ounce of water.

Balanitis; Oil-Dressing.—Draw back the foreskin and thoroughly cleanse the parts, then apply to the glans a piece of muslin saturated in sweet-oil, and retain it in position by drawing the foreskin over it. This is to be repeated once in twenty-four hours. In about four days the inflammation subsides.

MEDICAL DIVISION.

Pneumonia.—The treatment of pneumonia varies but little. The chest is enveloped in an oil-silk jacket, and dry cups applied anteriorly and posteriorly over the affected lung. In sthenic cases tincture of aconite is given, with liquor ammoniæ acetatis, to promote perspiration. Quinia or cinchonia is also administered to support the strength, with carbonate of ammonia to preventd formation of heart-clot.

Scorbutus.—In this disease the muriated tincture of iron is administered, together with citric acid. Vegetables in liberal quantity are also given.

Phthisis.—The following prescriptions prove of advantage

in the troublesome cough of this disease: *R.* Potass. bromid., potass. chlorat., ammon. mur., āā ʒjss; syr. toluatam, ʒiv. Teaspoonful every two or three hours. *R.* Tinct. op. camph., ʒj; tinct. belladonn., ʒj; hyosciami, ʒij; spt. lavand comp., ʒj. *M.* Ten drops on a piece of sugar every hour until cough is relieved.

Profuse Suppuration.—Drachm-doses of tincture ferri mur., every three or four hours, have proved efficacious in cases of suppuration, threatening fatal exhaustion.

Proceedings of Societies.

BOSTON SOCIETY OF MEDICAL SCIENCES.

Report of Proceedings from September, 1873, to February, 1874. JAMES J. PUTNAM, M. D., *Secretary.*

Tuesday, September 30th.—Dr. LINCOLN showed a *thermo-electric battery*, made by Noë, of Vienna. It contains forty-four couples, each consisting of a cylindrical piece of compound metal as big as a lead-pencil, and about one inch long, into one end of which a straight copper wire is fastened. These couples are arranged horizontally, in two rows, so that the copper-wires may be exposed to the flame of alcohol from a single long wick.

It is probably equivalent in force to one Bunsen element, according to Schwands. The instrument was not recommended on the score of economy, as it burns up alcohol pretty rapidly, but is quite constant.

Dr. AMORY described some preliminary *spectroscopic experiments*, undertaken with the final object of investigating the influence of mercury upon the secretion of bile, by the method of analyzing the coloring-matter in the feces spectroscopically. To this end feces of man and animals were digested with alcohol, either cold or boiling, or by ether, then milk of lime added, the preparation treated with dilute sulphuric acid, and the solution thus obtained compared with blood-solutions, and chlorophyl solutions, by means of the spectroscope.

A number of specimens were exhibited, and Dr. Amory called attention to the close resemblance between the spectra of grass-chlorophyl and those of the ethereal and alcoholic extract of bovine fæces, from a cow fed on grass.

Dr. BOWDITCH spoke of some *blood-pressure experiments* performed with the manometer attached to the femoral artery of some unusually large frogs.

The normal pressure was found to be about 37 mm. merc., which is of interest, because, through other experiments made by Blasius, it has been shown that it is under just about this pressure that the frog's heart works to the best advantage. He found also that, just as in the case of warm-blooded animals, the blood-pressure rose when sensitive nerves were irritated.

Dr. WHITE related as a sequel to his paper "On Rhus Poisoning," presented to the Society a year ago, his personal experience of the present season. Early in the summer he brushed through a thicket of *Rhus toxicodendron* (the poison-vine), as he had done many times before in his life, but always without effect. This time, however, the contact was followed by a severe attack of "poisoning" upon the face and hands. It seems as if he had, by his experiments described in the paper, inoculated himself with a susceptibility to the action of the poison.

Tuesday, October 28th.—Dr. DWIGHT read a paper upon "Muscular Structure and Contraction" (published in the "Proceedings of the Boston Society of Natural History," vol. xvi., November 5, 1873).

Dr. BOWDITCH showed an *apparatus* devised by himself, *for fastening a dog during vivisection*. It consists of a short round rod of iron which is placed like a bit in the mouth of the animal just behind the canine teeth, and which is held in place by a cord tied round the jaws so as to prevent the mouth from being opened. The ends of the rod are made to fit readily and firmly to the extremities of a fork-shaped piece of iron, in which position a spring-catch holds them fast. The shank of the fork slides in a socket provided with a binding screw, which is adjustable at any desired height on a vertical rod. The head of the animal can thus be placed, and held firmly, in any desired position.

Dr. Wood spoke concerning the delicacy of some of the chemical *tests for blood*; especially of one of those more recently discovered.

The ordinary tests were first mentioned, as namely:

1. *The Spectroscopic Test*.—The production of the absorption bands in the oxy-, and reduced, hæmoglobin in the solar spectrum, which will detect, according to Preyer, the hæmoglobin in a solution containing one part of blood (by volume) to 4,400 of water. For the detection of so small an amount, however, a very nice instrument is necessary. The chief objection to applying this test to blood-stains is that a larger amount of fluid is required than can be obtained from an ordinary stain. A much smaller quantity is sufficient when a microspectroscope is used.

2. *Teichmann's Test*.—This is the best and most delicate when we have a simple dried spot to deal with, and may even be used when we have a solution to test. It is performed in the following way:

Mix the dried stain, or the residue left by the evaporation of a few drops of a solution to dryness, with a little common salt, or better, chloride of ammonium, upon a glass slide; add a drop of glacial acetic acid to the mixture, cover with a covering glass, heat to the boiling-point of the acetic acid, allow it to cool, and examine under a microscope for hæmin-crystals.

These are dark-brown or yellow, opaque, quadrilateral crystals of the chloride of hæmatin.

In trying the delicacy of this test, Dr. Wood succeeded in obtaining hæmin-crystals from one drop of a solution containing one part (by weight) of fresh blood to 272 parts of water, or one part of dried blood to 1,100 of water, at almost every attempt, and was successful in the majority of times with one drop of a solution containing of fresh blood one part in 1,360, or of dried blood one part in 5,500.

3. *The Albumen Test*, which is of slight importance.

4. *The Iron Test*, which is only of importance when applied to the crystals obtained by Teichmann's test, after freeing them from impurities by washing.

5. *The Tungstate of Sodium Test*, a new one, based upon the fact that hæmoglobin can be precipitated *as such*, from

extremely dilute solutions if there be added to such solutions a saturated one of tungstate of sodium, which has previously been acidulated with acetic acid, and the mixture heated to boiling. This reagent forms with the hæmoglobin a substance which has a chocolate-brown color (specimen exhibited), and is insoluble in water. Its exact composition is unknown. Ammonia-water and the fixed alkaline hydrates dissolve this precipitate, producing a colored solution (specimen exhibited), having the same appearance as the alkaline solution of a corresponding amount of blood. By means of this reagent Dr. Wood had precipitated the blood-pigment from a solution containing of dried blood one part in 5,500 of water, and had also precipitated the pigment from a solution which showed only the hæmatin spectrum, and in which, therefore, the hæmoglobin had been destroyed. The chief advantages of this test are: 1. That it enables us to precipitate the pigment not only from fresh solutions, but also from those which have undergone decomposition. 2. That it enables us to concentrate a very dilute solution, and is of great delicacy. 3. That it enables us to preserve a given specimen of pigment for an indefinite length of time, since the precipitate can be washed and dried without losing any of its properties. 4. That the purity of the pigment can be insured by thorough washing with water and dilute acids. 5. That Teichmann's test can be subsequently applied to the precipitate, and hæmin-crystals obtained (a specimen of crystals thus obtained was shown under the microscope). 6. That the iron test can be applied to this precipitate as well as to the hæmin-crystals, and with much greater ease.

This last test is far superior to any other when we have a diffused stain on cloth to deal with—one, for instance, in which an attempt has been made to wash or soak out the original stain with water or other liquid. In such a case the cloth should be soaked or washed in a dilute solution of iodide of potassium, which is a much better menstruum for removing blood-pigment from cloth than pure water. This solution can then be treated with tungstate of sodium, and boiled. The precipitate can then be collected, purified by washing, and one portion tested by Teichmann's test, another by the iron test, and

the rest by a drop or two of ammonia-water to show the red color.

Dr. EDES exhibited *sections of the spinal cord* from a patient with ataxic symptoms. They showed sclerosis occupying, in the lumbar region, the exterior portions of the posterior columns, close to the entrance of the posterior roots, and in the cervical region the wedge-shaped columns upon each side of the median line.

The posterior columns in the cervical region were much atrophied.

Dr. JEFFRIES spoke of having noticed a peculiar recurrent, positive *after-picture*, always of blue color. Repeated experiments did not produce it of any other color—it was always blue. It seemed to him something separate from, or additional to, the gradations of color in the fading, positive after-pictures, noticed by Helmholtz and others.

November 25th.—Dr. BLAKE described a *peculiarity* observed by Prof. Wyman, first in the *crania of Hawaiian-Islanders*, and subsequently in the crania of the ancient Peruvians, consisting of exostoses of the external auditory meatus, occurring uniformly on the exterior and interior lips of the lamina, forming the posterior wall of the passage, the same peculiar growth being described by Walker as occurring in the crania of the American Indians.

Out of 334 Peruvian crania, examined by Prof. Wyman, the growths were found in six, and in various degrees of development, from a small pedunculated growth on the superior lip of the lamina, to double growths on both lips, nearly occluding the orifice of the passage. It was noticeable, moreover, that these growths were nearly uniform in size and shape on the two sides. Out of eight Peruvian crania in the Warren Museum, but one presented this peculiarity, and then only in the form of an elongated ridge upon the posterior wall of the meatus on one side. The supposition that aquatic habits might have to do with the presence of these growths would not apply to the Peruvians, living as they did in a tract of country remote from the sea and remarkable for its aridity.

That the occurrence of these growths is coincident with the development of the wall of the osseous meatus, as suggest-

ed by Dr. Green, is further supported by the fact that the location of the growths is a constant one.

In reply to Dr. White, Dr. Blake said that four out of six were male skulls, and apparently from subjects of advanced age; to Dr. Fitz, that no other exostoses at other parts of the skulls were found.

Tuesday, December 30th.—Dr. Ellis stated that, in the winter of 1873, he called the attention of the profession to *the line of dullness in pleurisy with effusion*.¹

It is generally taught that fluid first collects in the lower part of the back, and, extending upward, always maintains a higher level here than elsewhere.

Observations made upon a number of patients have, however, shown him that this rule cannot be regarded as correct.

When the effusion is small, it may occupy a conical portion of the pleural cavity, in the subaxillary region, where both resonance and respiration may be wanting. But, in a certain number of cases, where the effusion is quite large, if an accurate line be drawn, the flatness will be found to describe a curve, gradually approaching the spine toward the base of the chest, leaving a space of from one to three or more inches broad, between the spine and the line of flatness. In this space resonance and respiration persist. As the effusion increases, this line approaches nearer and nearer to the spine. The modifications of the voice noticed in pleurisy bear the same relation to this line that they do to the more horizontal one. This fact may be of great value in diagnosis, as the persistence of both resonance and respiration in the part of the back mentioned might lead one to conclude that there was no effusion. This curved line, first noticed in cases where the fluid was increasing in amount, was subsequently found to be well marked in others where it was diminishing. In one of these the operation of thoracentesis had been performed, and in the others spontaneous absorption was going on.

Since calling attention to these facts, Dr. Ellis had ascertained that similar observations² had been made many years

¹ *Vide Boston Medical and Surgical Journal*, January 1, 1874.

² Damoiseau, *Revue Médicale*, 1843. Wintrich, *Virchow's Archiv. für Path. und Therap.*, Bd. v, S. 254.

since, but unfortunately no notice of them was to be found in most of the standard works.

Dr. KNIGHT suggested that the resonance, etc., near the median line in these cases might be transmitted from the lung of the opposite side.

Dr. ELLIS replied that this would not explain the peculiar position of the line of dullness in other parts of the chest.

Dr. BLAKE described a case of *atrophy of the ossicula of the ear*, as well as of the membrana tympani. The latter had become so transparent that both incuses could be seen through it with great distinctness, and careful measurements made by means of a micrometer, inserted into a speculum, showed both to be smaller than normal in all dimensions. The membrana tympani of the other ear was simply thickened, as usual in catarrhal inflammation of the middle ear. There was no diminution in diameter, either of the membrana tympani or of the tympanic cavity on the affected side.

Dr. WEBBER described briefly a case bearing on the *physiology of taste*.

The patient, thirty-three years of age, had suffered for three years from entire facial paralysis of one side, due possibly to a blow on the head with a billy, possibly to syphilis, of which there were, however, no traces still to be detected. On the same side with the paralysis there was complete deafness, and the corresponding anterior half of the tongue had lost its power of distinguishing between bitter, sweet, and saltish substances. The fifth nerve was entirely unaffected.

Dr. WEBBER mentioned that Lussana had reported similar cases, both where the fifth nerve had been injured without taste having been lost, and where loss of taste had followed injury to the seventh nerve, above the point of departure of the chorda tympani, and that experiments upon animals had led him to the conclusion that such is the rule with them.

Dr. BLAKE mentioned that he had noticed that when different substances, such as sulphate or carbolate of zinc, alum, or nitrate of silver, were applied to the ear in cases where a perforation exists, through which they might reach the chorda tympani, peculiar sensations were sometimes felt which enabled the patients to distinguish, at least for a moment, which of the substances was being applied.

Tuesday, January 27th.—Dr. Lincoln read a paper describing experiments made upon the *resistance of the human body to galvanic currents, the intrinsic resistance of the Siemens cell, and the amount of chemical work done by the current of the latter cell in traversing the body in the manner usual in medical applications.*

The resistance of the body was determined by a galvanometer capable of indicating differences of 10 or 20 Ohms—sufficiently delicate for the purpose. It was found that the forearm presented a resistance of 2,000, which, by pressing the electrodes firmly into the flesh, could be diminished to 1,300, the skin having previously been soaked for a minute or two in warm, fresh water (the resistance of the tongue about 2,000). On a previous trial a similar result had been attained. From the dorsum of the hand to the palm of the hand, $R = 6,100$, but when the hand had been previously soaked for five minutes this diminished to 3,600–4,000.

Dr. WHITE and others asked why the hand exhibited such resistance; and in reply Dr. Lincoln explained, first, that the cutis of the hand is very dense; second, that the forearm, when currents are sent through it from back to front, forms a conductor of peculiar shape—rather thicker than the hand, it is true, but practically very much broader; in the case of the hand the current had to traverse—as applied by Dr. Lincoln—a layer of tissue bounded by the metacarpal bones of the thumb and forefinger, inclosing a small triangle only; in the case of the forearm a cushion 8 or 10 inches long, and 5 or 6 broad was present, furnishing conditions more than counterbalancing the thickness of the forearm.

The resistance of the Remak (Siemens) cell was stated to be, $r = 20$ to 30 Ohms, as ascertained at different times by Dr. Putnam and himself.

Ohm's law having been next explained, Dr. Lincoln proceeded to substitute the values of R and r as above, letting $R = 2,000$, and $r = 30$, and supposing 40 cells of the battery in circuit. These are the conditions that exist when we pass a very strong current for medical purposes.

The absolute unit of force (B A) being defined as "that force which would produce in a body weighing one gramme a

velocity of one metre per second of time," it is found from the above values that the value per second of the current thus traversing a human body $= (0.000125 =) \frac{1}{8000}$ of an absolute unit. In five minutes' time this becomes $(0.0375 =)$ about $\frac{1}{25}$ of an absolute unit, equivalent to the twentieth part of a grain troy, acting for a second of time.

This result illustrates the fact that physical forces may apparently cause physiological reaction of enormously disproportionate magnitude, the present instance being in point, since the quantity of electricity sent through the body is capable of stimulating the muscles to the performance of many hundred pounds of work.

In the form of chemical activity the electric current performs a calculable work, viz.:

Every unit of the current decomposes 0.142 grains of water, or develops 1.05 cubic inch of mixed gases. In five minutes' time we have seen that $\frac{1}{25}$ of such a unit of current passes; therefore, during the passage of a powerful current through the body for five minutes, the amount of force of a purely physical nature exerted, equals the force required to decompose $(0.005125 =) \frac{1}{200}$ grain of water with development of $\frac{1}{25}$ of a cubic inch of gases.

An experiment was described illustrating the latter point.

Two platinum tips were passed into a test-tube filled with distilled water, which was then inverted into a vessel of water in order to serve as a receptacle for the generated gas. The current from forty cells of the battery was passed through the water, by means of these platinum tips for half an hour, and the amount of gas collected showed that $\frac{1}{25}$ of a grain of water had been decomposed, which corresponds almost exactly with the value we had just previously obtained by the theoretical calculations. The resistance of the water subjected to decomposition was very nearly $= 2,000$, which made the case quite parallel with the former case of the intercalated human body.

Dr. Wood made an oral communication relating to the *identity in form and appearance of crystals of the chloride, bromide, and iodide of hamatin*. This was proved in the following manner. The hæmoglobin was precipitated from a blood-solution

by sodic tungstate, and the precipitate thoroughly washed, so as to free it from all traces of chlorine. Portions of this precipitate were then placed upon four glass slides and dried. That upon one slide was treated with glacial acetic acid, and boiled. After cooling, it was examined with the microscope, and no crystals could be detected.

The other three specimens were then mixed, one with chloride of ammonium, another with bromide of potassium, and the third with iodide of potassium, and each specimen was heated with glacial acetic acid. After cooling, crystals, having precisely the same appearance, were visible in each of the specimens, and these crystals were, in the specimen to which the chlorine had been added, the well-known hæmin or chloride of hæmatin crystals.

In reply to Dr. White, Dr. Wood said that all these crystals formed with equal readiness.

Dr. WHITE remarked that these chloride of hæmatin crystals seem to be capable of almost indefinite preservation. Twelve years ago he had obtained some of them in examining an atom of blood, of the size of a pin's-head, found upon a boot between the sole and upper leather, and they were now as perfect as ever.

Dr. WADSWORTH reported briefly a case observed by himself, in which nearly complete *paralysis of the trigeminus* on one side, as shown by marked diminution in the sensation of one entire side of the face, the conjunctiva of one eye, one side of the pharynx, fauces, and tongue, as well as by a superficial ulceration of the cornea, and the characteristic impairment of mastication, had been attended with complete loss of taste on the corresponding side of the tongue. There was not the least evidence of paralysis of the facial nerve.

The case contrasted with that reported by Dr. Webber at the last meeting of the Society, where a similar loss of taste had attended paralysis of the corresponding facial nerve exclusively. Dr. Green suggested that the loss of taste in this case might be due partly to changes of nutrition in the tongue, such as attend injury to the chorda tympani, and that, until these changes were better understood, we could not say definitely that the loss of taste in such cases was due entirely

to the withdrawal of the influence of a certain nerve. Unilateral hypertrophy of the tongue, for instance, has been produced by cutting the chorda tympani, probably through its influence upon the circulation, and has attended facial paralysis.

Dr. WADSWORTH said that certainly there were no such changes that could be detected by the eye alone.

Tuesday, February 24th.—Dr. H. P. Bowditch read a paper showing that the *vapor of chloroform*, inhaled into the lungs, *tends to neutralize the effect of irritation of sensitive nerves in causing a reflex rise of blood-pressure*. The vapor of ether had this effect, if at all, to a much less extent than that of chloroform.

In reply to a question from Dr. Webber, as to whether the difference in action observed between chloroform and ether might not have been due to the fact that the narcotization from the ether was not, at the time of the experiment, so complete as that from the chloroform, inasmuch as the production of the former takes longer than that of the latter, Dr. Bowditch said that the means used for etherization were very thorough, and the time, as he believed, made sufficiently long to insure complete narcotization in both cases.

Dr. JEFFRIES showed a specimen of *intraocular tumor*, which he said he thought when he first saw it, in November, 1869, would prove to be a unique case of villous cancer. He had recently found a portion of the specimen, and upon further examination had concluded that it was a spindle-celled sarcoma. A very unusual connective-tissue growth, such as he had never before seen, caused the larger portion of the tumor to consist of a flocculent mass.

These villous-like projections, when floated on to a slide, gave, under the microscope, an almost fern-like grouping of the attached spindle-cells, with long projections. Where the growth springs from the choroid, it is, however, much more solid and firm, resembling ordinary melano-sarcoma.

Dr. PUTNAM showed some *sphygmographic tracings* taken from a man recently a patient in the Massachusetts General Hospital, illustrating a peculiar *rhythmical irregularity of the pulse*; one strong beat of the heart being followed by one,

two, or three weaker ones, as the case might be, and so on in regular succession. He referred to other instances of rhythmical irregularity of the pulse observed by Traube upon patients, and upon animals under certain pretty definite circumstances, which did not apparently obtain, however, in this case. This patient had symptoms pointing to chronic spinal disease, probably due to lead. He had been a house-painter for twenty years, and lead was present in the urine. (To be published in the *NEW YORK MEDICAL JOURNAL* for 1874.)

NEW YORK PATHOLOGICAL SOCIETY.

DR. H. KNAPP, President, in the chair.

At the meeting held April 22d, Dr. H. B. SANDS presented a specimen of stricture of the colon occurring in a female, aged forty-five, upon whom he had performed colotomy. She had suffered from obstruction of the bowels, which had been growing worse for four weeks previous to the time at which Dr. Sands saw her. It was unattended by any severe symptoms, such as vomiting. On external examination, no indication of the seat or nature of the obstruction could be discovered. The abdomen was considerably distended with gas. He could not trace the track of the colon, nor ascertain whether it was distended with fecal matter. There was considerable protuberance, but the patient bore pressure without complaining. This pressure frequently excited a vermicular contraction, so that the motions of the colon could be followed through the parietes. The patient was quite thin. A rectal exploration was made with the finger, March 12th, and the result was negative. This was all the examination practicable on that day. On the following day, Dr. Sands made a rectal exploration with the hand. The patient took ether without trouble. She was placed on the left side, and the left hand was used. This examination gave no positive result. The hand passed without resistance; and, with a little care, passed the sigmoid flexure and reached about twelve inches from the anal orifice. The forearm was too large to attempt

a higher examination. No stricture was detected, but the intestines were considerably distended with fecal matter. On the 24th day of March the patient was again examined. It was now discovered that the caput coli was enormously distended. Dr. Sands performed lumbar colotomy on the right side, without accident. On opening the ascending colon the fæces escaped copiously, and continued to escape after the patient was put to bed. At the time of the operation she was feeble, and on the following day she died from shock. The autopsy was made next day, and the specimens presented were removed :

On opening the peritoneal cavity the peritoneal lining was found slightly distended, but there was no peritonitis. Two parts of the colon were removed. The colon at one point was adherent to the liver. The other portion was the caput coli. It there exhibited a curious result of the extreme distention. It was so great that the peritoneal coat had been ruptured; and needles had been passed through three places where such rupture had occurred. In one instance it would appear that one of the longitudinal bands had been divided. This rupture did not pass through the mucous lining of the intestine. The remaining specimen showed the rectum and sigmoid flexure; the seat of the stricture was fifteen inches from the anal orifice.

Without the method employed, diagnosis as to whether the obstruction was in the small or large intestines would probably have been impossible. Another point is, that such examination is necessarily attended with risk. The third point relates to the difficulty of ascertaining the situation of the colon.

Dr. JANEWAY said that he had, not long ago, occasion to need specimens from a cadaver. The friends would not permit a *post mortem*. Through the anus, however, they were readily procured. In this way, pieces of the liver and both kidneys were extracted.

Dr. ERSKINE MASON presented a specimen which very appropriately followed the above, and showed one of the obstacles that may be met with to prevent a successful performance of colotomy.

The parts of the intestines—rectum and colon—presented were removed from a man thirty years of age, who four and a half years ago was attacked with diarrhœa, which came on suddenly in the night, without known cause. This condition of things continued up to his death, with the exception of a few days, when he suffered from constipation. He had been under observation for two years. When first brought under notice, he was suffering from stricture from the rectum, about two or three inches above the anal orifice. This was kept pervious for a time by means of bougies, but it would return. He was anxious to have an operation upon the rectum performed, but it was deferred because the man was very much run down.

The operation was performed March 14th, on the left side. There was nothing unusual until they came upon the colon. The intestines were immovable. Dr. Mason attempted to pass a needle through a portion of the intestines and bring them up in that way, but was unable to do so. It was determined to abandon the operation. The wound was carefully closed up and the patient returned to his bed. No unpleasant symptoms followed, and the wound healed up in a short time. But from that time the patient suffered from a very severe cough. He evidently had phthisis, gradually sank, and died April 11th, twenty-eight days after the operation.

Post-mortem Examination.—The ascending, transverse, and a portion of the descending colon, were very much distended with gas. The coats of the intestines were enormously thickened, measuring five lines, and were perfectly immovable. It had to be dissected out with scalpel and scissors. The small intestines were very much contracted and deeply congested. The lungs were extensively diseased. Nothing was found by the microscope but increased connective tissue.

Dr. JANEWAY presented specimens from a woman forty years of age, admitted into Bellevue Hospital March 11th. Six months before entering she noticed a tumor about three and a half inches to the right of the umbilicus and two inches below. At that time it was about the size of an egg; in two months the size of an orange. Previous to these two months,

no pain or uneasiness was felt, but it soon gave rise to a sense of soreness and depression from weight. It reached its maximum about five months after she first noticed it. For the last month she had vomited in the morning. Her parents had been healthy and she herself had been healthy. It was easily made out that the tumor was not connected with the kidney, though it grew over in that direction. She developed hectic, and died from asthenia.

At the *post mortem* the tumor was found to be situated as above mentioned, and even on ocular examination it was difficult to say where the tumor originated. It was colloid cancer. The transverse colon passed underneath the tumor; the duodenum passed to the left. In the duodenum there were two openings, and in the transverse colon one. The tumor proved to be a hollow sac filled with fecal matter and broken-down masses of colloid cancer. The gall-bladder was involved in the disease, and consequently the liver. Both lungs presented evidences of colloid cancer. The feces were not examined during life. They might have rendered considerable assistance in the diagnosis by the presence of cancerous cells.

Dr. JANEWAY presented a very large vermiform appendix, with occlusion of the orifice, and he also exhibited a specimen from the dissecting-room, showing both Fallopian tubes bound down to the top of the uterus, and a fistulous communication between them and the sigmoid flexure. A small probe could be passed through the opening. There was a small abscess between the tubes, and the sigmoid flexure was two inches in diameter.

Dr. BRIDGON exhibited a tumor taken from the anterior femoral region midway between the groin and the knee. On section it was supposed to be an areolar cyst, varying in size from a small hickory-nut to a small pea. Under the microscope the tumor was found to consist principally of white fibrous tissue, and one or two fibro-plastic cells.

Dr. CHARLES A. LEALE presented specimens from a patient who exhibited cerebral symptoms in 1864; went on very well until last September, when he was attacked with left facial paralysis, which was entirely relieved. On Saturday morning

last, at two o'clock, he found his left pupil dilated. He was paralyzed on the right side, and he was then in violent convulsions. He had no history. The urine was nearly one-half solid. Violent convulsions followed at intervals of fifteen or twenty minutes, and the man died at 6 A. M.

Autopsy.—On examining the brain and membranes, the latter were found to be adherent at the superior portion near the median line. On the left side there was a very large clot nearly filling the Sylvian fissure. The arteries at the left of the circle of Willis were in an enormously enlarged condition. The middle cerebral artery was examined carefully. The anterior and posterior branches of the middle cerebral arteries were found to be occluded with a new atheromatous deposit. The middle branches were found to be occluded about one-quarter of an inch beyond the proximal point. Between this place and the middle cerebral artery an opening about one-eighth of an inch in diameter was seen, from which hæmorrhage had occurred. The walls of the heart were very much dilated; liver very large and waxy. In the gall-bladder was found a small calculus about the size of pigeon's-egg, and very bright and shining at the time it was removed. Right kidney was five inches long, and the left seven and three-quarter inches long. The surface of the left kidney presented a grayish-white appearance. The urine before death was slightly acid, specific gravity 1,005, and contained a large quantity of albumen and casts. The brain weighed fifty-four ounces, and the heart seventeen and one-eighth ounces.

The second specimen presented was a placenta, from a lady at full term, upon which were three large, fatty deposits about the size of a small hen's-egg. When the placenta came away it looked exactly like an ordinary fatty tumor—simply a deposit of fat in the areolar tissue. The history of the patient revealed symptoms of syphilis. Her husband suffered from syphilitic sore-throat. He supposed that he had been cured. The woman, at intervals of four or five weeks during her period, had a flow resembling the usual menstrual discharge. The child is moderately well developed, but feeble, and resembles a child suffering from marasmus.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

ELLSWORTH ELIOT, M. D., President, in the chair.

College of Physicians and Surgeons, April 27, 1874.

THE following gentlemen were elected members; Charles E. Lockwood, a graduate of the College of Physicians and Surgeons, 1868; George F. Jackson, Jefferson Medical College, Philadelphia, 1853; Stephen Kelly, Bellevue Hospital Medical College, 1870; Edwin Farnham, University of Pennsylvania, 1869; James Morehead, Bellevue Hospital Medical College, 1873; George Reigel, University of Giessen, Germany; John T. Nagle, University of New York, 1864; Harry L. Sims, College of Physicians and Surgeons, N. Y., 1873.

The death of Thomas O'Farrell, M. D., was announced. He died in New Britain, Conn., in the forty-fourth year of his age, and had been connected with the County Society since February 7, 1870.

Dr. VAN KLEEK called attention to the matter of assessments laid upon each member at the last meeting, in order to defray the expenses of printing the Transactions of the State Medical Society. He quoted the Act to further amend an Act regulating medical societies, passed April 13, 1819, page 318, showing that the above form of assessment was illegal. On motion, the action of the last meeting was reconsidered; and, on motion of Dr. O'Sullivan, the Society recommended the several members of the Society to subscribe for the Transactions, in order to facilitate its publications by the committee; it being understood that one copy would be received for each \$1.50 subscribed.

The Committee on Diseases reported a marked improvement in the general health of the city during the three months just passed. During that time, four hundred and five persons, seventy years and over, have died. There have been very few cases of small-pox, and little or no typhus or typhoid fever. Diseases of a minor nature have been about as usual.

The Committee on Meteorology reported for the months of November and December, 1873, and January and February,

1874, or one hundred and twenty days, the mean barometrical measurement, 30 inches; mean thermometer, 34.90° ; maximum thermometer, 72° , February 23d, P. M.; minimum, 3° , February 20th, 4 A. M. Amount of rain and snow, 17.96 inches. Rain and snow fell on the whole or portions of twenty-six days, and snow on fifteen. We had fog eleven days. Only during forty days was the thermometer below freezing-point; and the greatest range was in February, 50° . On January 23d, the temperature fell 28° in twelve hours; on February 23d we had fog, and temperature rose 36° . The next day the temperature fell 40° . The wind traveled 21,453 miles, or per week 1,261 miles.

Dr. JANEWAY exhibited a case of pure leucocythæmia, the patient being thirty-two years of age. He presented a marked enlargement of the left side. The examination of the blood by the microscope shows the proportion of white corpuscles to the red as one is to three or four. In appearance, they were round and granular. When treated with acetic acid they showed about four nucleoli. Besides the increase of the white corpuscles, there was less than the normal amount of red blood-corpuscles.

Dr. R. W. TAYLOR read the first portion of his paper on "Syphilitic Lesions of the Osseous System in Infants; and their Relation to Struma and Rickets." He said that there was, perhaps, no portion of the field of syphilography in which so little progress has been made as this; and it had not been studied because of the blind ideas which had prevailed in regard to the disease. One reason popularly held is because the lesions which we now know to be caused by syphilis were attributed to scrofula. The idea was, that, when children had bone-disease of any form, it could all be explained by the "struma" theory; and the fact that many were due to syphilis escaped notice. But, from time to time, cases due to syphilis were reported, yet they were not numerous. In 1870, an important article was published, in which the author gave the microscopical appearances of lesions of bone from twelve children. He stated that such lesions were not rare; and a second observation was made by Dr. Paré, of Paris. The grand result of these observations is to place the matter in its true

light and call the attention of the profession to its importance.

The essayist then detailed twelve cases of his own, in which he traced their development, course, and decline. Symptoms of hereditary syphilis are similar to those of acquired syphilis.

The Society then adjourned, to meet in two weeks, to hear the conclusion of the paper.

NEW YORK MEDICO-LEGAL SOCIETY.

College of Physicians and Surgeons, April 23, 1874.

J. C. PETERS, M. D., Vice-President, in the chair.

THE following gentlemen were unanimously admitted as resident members: Charles E. Denhard, M. D.; Simon Salton, Esq.; Prof. P. M. Bedford, of the College of Pharmacy.

S. WATERMAN, M. D., read a paper on the importance of spectral analysis in forensic medicine. After a preliminary explanation of the terms employed in the science, and a few considerations relating generally to the subject, he came to the immediate medico-legal bearing of the paper. By means of the spectroscope we could detect the presence of blood where the microscope would fail, and where the perpetrator of a crime had used the most ingenious methods of circumventing the officers of the law. The study of the spectroscope was yet in its infancy, and its application had been made in only a few instances. It has been employed to detect the nature of disease; and, as in one case mentioned, may determine the question of the necessity of an operation in diseases of females, tumors especially.

NEW YORK SOCIETY OF NEUROLOGY AND ELECTROLOGY.

MEREDITH CLYMER, M. D., President, in the chair.

DR. GEORGE W. BEARD gave a brief *résumé* of experimental researches recently conducted by him on the physiology of the brain. The conclusions at which he arrives are:

1. The living brain responds to electrical irritation, faradic and galvanic.

• 2. There are in the brain certain definite centres of motion, and probably of sensation.

3. The centres for the muscles of the mouth, neck, and legs, appear to be in the anterior portion of the brain. The posterior portion is possibly the centre for special senses. Superficial irritation of the different parts of the cerebellum causes emprosthotonus. This is easily shown. Irritation of the tubercula quadrigemina causes opisthotonus, as is easily shown. Irritation of the hippocampi causes no visible reaction.

4. The brain, in respect to these centres, is symmetrical; and is, indeed, a double organ.

5. There is in the brain of a rabbit, in the posterior portion, about a quarter of an inch from the median line, a spot in each hemisphere that seems to be a centre for jumping and leaping movements.

D. B. ST. JOHN ROOSA, M. D., read a paper entitled, "Contributions to the Etiology of Diseases of the Internal Ear." His observations were founded upon the study of eighteen hundred cases. He divided diseases of this character into traumatic and idiopathic. In boiler-makers, telegraph-operators, and persons who are accustomed to hear sounds which do not vary in pitch, the disease is dependent primarily on some lesion of the labyrinth or cochlea. If a man, already suffering from diseases of the middle ear, should engage in either of the above-named employments, he would suffer more quickly and easily than one who entered upon such pursuits in a perfectly healthy state. Cotton in the ear of a boiler-maker tended to preserve the hearing. Quinine would aggravate a previously-inflamed surface of the internal ear, and make aural diseases much less amenable to treatment.

Upon this point Dr. JACOB I did not agree with the essayist. He thought that, instead of producing congestion of the cerebral blood-vessels, quinine produced an anæmic condition of the same.

Dr. HAMMOND and Dr. LENTE contended that quinine did produce congestion. The latter gentleman mentioned several cases in which he thought there could be no doubt that quinine injured the ear.

NEW YORK ACADEMY OF MEDICINE.

OBSTETRICAL SECTION.

Dr. Church in the chair.

Dr. GARRISH read a paper on "Diphtheria," giving its history, etiology, diagnosis, prognosis, general course, treatment, and sequelæ, referring under the latter head to the occurrence of local and general paralysis, and the use of electricity for the same; and, finally, to embolism as a cause of sudden death.

Dr. Post thought this disease was not limited to the weak and sickly, but occurred sometimes among the strong and healthy. He had himself lost a son twenty-seven years old, and vigorous, who had become wet through, and thoroughly chilled. He employed tonics; and locally a solution of bromide of potash. Had always found local treatment very difficult.

Dr. FARNHAM had had excellent results in several cases from the use of the sulpho-carbolate of soda, grs. 20 every two hours. In adults he gave three to five drams daily. He also employed with great benefit tr. ferri chloridi, potash chlorate, milk-punch, and wine-whey. Locally he employed chlorate potash, and a solution of carbolic acid in water and glycerine, to the throat and nares.

Dr. FOSTER looked upon the disease as a species of blood-poisoning and prostration of the nervous system, and employed a sustaining treatment. Had seen paralysis of heart and rheumatism follow an attack.

Dr. J. LEWIS SMITH, had found death in diphtheria to be caused either by asthenia or laryngitis. The disease resembled erysipelas in attacking tender parts. Had seen rheumatism follow diphtheria occurring with scarlet fever. The treatment should be supporting. Drinks should not be taken immoderately after topical applications. Of these, one of the best was the following: Carbolic acid gtt., v-x; liq. ferri subsulphatis, ℥j-℥ij; glycerine ℥j—misco. Two grains quinine, every two hours (in children), reduces the excessive pulse and temperature.

Dr. BLUMENTHAL concurred in the views generally expressed, and thought that many cases of tonsillitis were included in cases of diphtheria reported as cured.

NEW YORK NEUROLOGICAL SOCIETY.

W. A. HAMMOND, M. D., President, in the chair.

At a regular monthly meeting of this Society, held May 4th, at the College of Physicians and Surgeons, Dr. HAMMOND delivered an inaugural address, as President, taking for his theme "The Effects of Alcohol on the Nervous System."

The physiological and pathological action of alcohol was dwelt upon at some length, and a series of interesting experiments was performed to demonstrate the presence of alcohol in the brain, spinal cord, and nerve-substance of animals which had been fed on alcoholized bread, but which had received no alcohol for six days before being killed for experiment.

Dr. HAMMOND believed the use of alcohol as a medicine indispensable, and its use as a beverage proper in cases where the digestive and assimilative functions were imperfectly performed. It was also useful where the individual was doing excessive mental work. It was impossible to lay down rules for its use, or to say what constituted excess. Some persons were benefited by large quantities.

Dr. HAMMOND expressed his opinion of the worthlessness of asylums for inebriates, as usually conducted, and believed that confirmed inebriates should be confined in lunatic asylums.

The paper was discussed by Drs. WILLARD PARKER, MEREDITH CLYMER, and J. C. PETERS.

NORTHWESTERN MEDICAL AND SURGICAL SOCIETY, N. Y.

Dr. BOSWORTH, President, in the chair.

Dr. GEORGE B. FOWLER made some interesting remarks relating to the various tests of urine, and particularly with reference to a modification of Tromer's test for sugar. In order to use this test, take one ounce of water and add to it one drop of honey; apply Tromer's test to a portion in a test-tube, and the chemical reaction will take place. Take one ounce of urine and add to it one drop or as much honey as you please; apply Tromer's test, and a transparent molasses-color will result. Take the precipitated red oxide of copper

which resulted in the watery solution in the first case and add boiling urine: the red precipitate will immediately disappear. The urine, therefore, possesses the property of dissolving the red oxide of copper, upon the appearance of which Tromer's test depends. But a certain quantity of urine can only dissolve a certain amount of the copper. So, if we add an excess of copper, this excess will be precipitated by the sugar, and the usual reaction will show itself. But when three or four drachms of urine are used, as is always the case, the quantity of potash solution which will have to be added in order to produce a clear blue color will overrun an ordinary-sized test-tube. Therefore, take from five to ten drops of the suspected urine and add two or three drops of the sulphate of copper solution (1 $\bar{3}$ to 1 $\bar{3}$). Then pour in the alkali until a transparent blue color appears. Now boil, and the reaction will be perfectly distinct and satisfactory.

Dr. E. C. HARWOOD presented a case which recently came under his care, of epilepsy, following an operation upon the temporal bone, the bone having previously been fractured by the falling of a limb of a tree.

PUBLIC HEALTH ASSOCIATION OF NEW YORK.

CHARLES P. RUSSELL, M. D., President, in the chair.

At a meeting held April 23d, Dr. GEORGE BAYLES read a paper entitled "Necropyrotechny and Alternatives," in which he called attention to cremation. He also referred to other methods of disposing of the dead, as lithographic transformation, by which the body is reduced to stone, and afterward undergoes an aqueous or chemical dissolution. Bodies having been interred in wax-cloth, had been found hundreds of years afterward. Embalming should not be practised.

MEDICAL LIBRARY AND JOURNAL ASSOCIATION OF NEW YORK.

At a meeting held May 1st, Dr. E. H. M. SELL read a paper giving an *exposé* of "Obstetrics as taught and practised

in the University of Vienna," in which he compared the manner of teaching this branch of medicine there and in America, and concluded that there was decided room for improvement in American schools.

At a meeting held May 8th, Dr. CLINTON WAGNER discussed "Cremation."

Bibliographical and Literary Notes.

ART. I.—*A Treatise on Therapeutics, comprising Materia Medica and Toxicology, with Especial Reference to the Application of the Physiological Action of Drugs to Clinical Medicine.* By H. C. WOOD, Jr., M. D., Professor of Botany, and Clinical Lecturer on Diseases of the Nervous System, in the Medical Department of the University of Pennsylvania, etc., etc. 1 vol. 8vo, pp. 578. Philadelphia: J. B. Lippincott & Co., 1874.

A SYSTEMATIC treatise on materia medica, as applied to therapeutics, based on physiological as well as clinical experience, has long been wanting in the English language. We therefore welcome with pleasure any new work intended to fill this vacuum. The author certainly displays much erudition and skill in the execution of "his voluntary task . . . first suggested by his own wants;" and there is no doubt that it may possibly prove in certain respects a useful guide to the application of the physiological action of drugs to clinical medicine. But we scarcely believe that the scope of the book claiming to be as comprehensive, warrants its title of a *treatise*. To deserve such a title, the work should be exhaustive, and the one before us is most certainly not so. It is, however, true that our author takes the "United States Pharmacopœia," with its numerous shortcomings, as his standard in the materia medica proper; we must, therefore, avoid being hypercritical.

As a basis to the book, he classifies remedial agents under two clinico-physiological heads: I. Substances which act on the solids and fluids of the body—*a*. General remedies, containing eleven classes; *b*. Local remedies, with fifteen classes; and II. Non-systemic remedies, subdivided into five classes.

Yet, in all of these numerous subdivisions, he omits an important one—*hæmostatics*, which, with our present physiological and clinical experience, ought not to be consigned to a mere mention in the class of astringents. For, as our author says: “The action of astringents is always a *local one*, i. e., produced not through the intervention of the nervous system, but by direct contact with the part affected;” while hæmostatics proper are systemic when administered internally, and only styptic when applied locally. Dr. Wood is not always accurate in his quotations and statements, and is at times self-contradictory. In his class of cardiac sedatives he refers to *veratrum album* and says (page 141) that Dr. Peugnet has affirmed that the *baratyna* of Simon is identical with the *veratroida* of *veratrum viride*. On referring to Peugnet’s paper (*New York Medical Record*, vol. vii., p. 133), we find that he denies the existence of *baratyna* in *veratrum album*. Such errors of quotation are pardonable, when, as the author admits, “the original memoirs, especially of our German *confrères*, are not at hand, and we have at most (and this quite frequently) an imperfect synopsis of really important and accurate observations.” Then, at page 360, referring to the action of emetics, he states that, “further, I have invariably failed to induce vomiting with *veratria*, even when given immediately after section of the *par vagum*.” In the *American Journal of Medical Sciences*, vol. lix., p. 40, 1870, while speaking of the action of *veratria*, he flatly contradicts the above by affirming that “vomiting I have never known to be absent.” On page 376, in alluding to atony of the muscular coat of the intestines as a cause of constipation, he refers to the well-known action of *strychnia*, and then says: “According to recent experiments, and clinical observations, Calabar bean (see page 275) may be employed.” At page 275 the clinical grounds in support of this view are exceedingly meagre, but on page 273, the physiological are: “Intestinal peristalsis is very much increased by the action of Calabar bean (Westermann, *Schmidt’s Jahrbucher*, Bd. cxxxviii., p. 269; Papl, *ibid.*, Bd. cxvii., p. 287; Frazer, *loc. cit.*, p. 57). After poisonous doses, there is at first a stage of exceedingly active movements in the bowels; then spasmodic tetanic convulsion of

the intestines occurs, so that their calibre is very much diminished; and, finally, relaxation and dilatation take place. After death the vermicular movements are very much lessened (Frazer), or altogether abolished (Tachau, *loc. cit.*, p. 73)." In atony of the muscular or contractile tissues we must make use of those agents that have a persistent tonic action, which the physostigma certainly has not. It is more than likely that the cases in which it is asserted to have been successful are those in which an error of diagnosis has been made, and the action of the drug has been due to its secondary or sedative effect. The author is apparently unacquainted with the well-known experiment which that eminent toxicologist Christison made on himself, and, although it had almost a lethal effect, he was enabled to analyze all the symptoms, as his mind remained unimpaired throughout the duration of the poisoning, and he failed to observe any tenesmus (Christison, *The Monthly Journal of Medicine*, vol. xx., p. 192, 1855). Had Dr. Wood been familiar with the experiments of Eben Watson (*Edinburgh Medical Journal*, 1867, p. 999), showing the antagonism of strychnia and physostigma, we doubt if he would in one sentence have recommended the use of strychnia or of physostigma. It is therefore evident that its application on physiological grounds rests on a very flimsy basis. Clinico-physiological therapists should therefore be very careful in advancing unsupported or unsustainable theories, for such lead eminent men, like the lamented Niemeyer and numerous others we could name, to doubt the value of experiments upon animals or healthy human beings, as applied to the treatment of disease (preface, p. 7), and scarcely warrant the author's assertion (p. 123): "Thus Niemeyer, who ridiculed experimental therapeutics, because he would not take the trouble to study them deeply and practically, and was therefore incapable of understanding them—Niemeyer says, 'Digitalis in pure uncomplicated hypertrophy is unsuitable.'" Here clinical observation confirmed physiological experimentation, and we are not aware that Niemeyer ever denied it.

At page 221, in summing up the action of atropia applied to the eye, Dr. Wood says: "The mydriasis is the result of a direct influence upon the peripheral nerve-fibres, those of the

oculo-motor being certainly paralyzed, those of the sympathetic and its ally, the trigeminus, being probably excited." Then at page 274: "The closeness of analogy between the pupillary action of atropia and that of Calabar bean is seen by the fact that, like the former, the latter . . . does not affect the irides of birds. . . . It is evident that the myosis may be caused . . . by paralysis of the sympathetic fibres, by stimulation of the oculo-motor fibres or by a conjoint action upon both sets of nerve-endings." As regards atropia, the author apparently ignores the well-known physiological fact that section or irritation of the trigeminus produces contraction of the pupil, and this before and after the division of the oculo-motor; it is therefore evident that if atropia has any effect whatever upon the peripheral nerve-fibres of the trigeminus, the greater power of this nerve over the oculo-motor would cause a contraction instead of dilatation of the pupil, "unless we agree that the less is more than the greater." In the action of Calabar bean on the pupil, he does not even allude to the probability of its action on the trigeminus, which, on physiological grounds and by analogy, is the most correct view, there being a peripheral paralysis of this nerve coincident with the fact that Calabar bean "paralyzes the peripheral sympathetic nerve-fibres of the iris." It is therefore more than doubtful "that there is a consantaneous stimulation of the oculo-motor termination" (p. 275).

In the more strictly original portions of his treatise the author is even less happy. For instance, he desires us to accept his views of the action of alkaloids of *veratrum viride*, the *veratroida* and *viridia*, as correct. On referring to his paper (*American Journal of Medical Sciences*, vol. lix., p. 42), we find the following fatal admission: "That the *veratrum viride* alkaloids worked with were not absolutely pure is, however, certain." Mr. Bullock, in his paper (*American Journal of Pharmacy*, September, 1865, March, 1866), fails to give the tests or reactions by means of which he had proof positive that he had fully isolated the two alkaloids. Moreover, as Dr. Wood says (p. 107) of the elaborate, important, and original experiments of our countryman, Dr. H. Ford, with alcohol (January, 1872, issue of this JOURNAL), they "lack the absolute

authority of complete confirmation." But, if any further proof of the utter unreliability of the purity of the alkaloids made use of by Dr. Wood were necessary, we find in the *American Journal of Pharmacy* (vol. xlv., Fourth Series, p. 100), that Mr. C. L. Mitchell, in making use of the process adopted by Bullock, alleges that he has found an alkaloid in the rhizoma of *veratrum viride*, the reactions of which are entirely distinct from those yielded by Mr. Bullock's alkaloids. It is therefore evident that both Dr. Wood and Mr. Bullock must repeat their experiments, on a sounder basis, before their conclusions can be accepted as accurate, or even deemed worthy of consideration.

Again, at page 298, while speaking of the action of the nitrite of amyl, he remarks: "An interesting question which herearises is, whether the dilatation is centric, due to an action on the vaso-motor nerve-centres, or peripheric, due to a direct action upon the muscular coat of the arterioles. It must be peripheric, it cannot be centric, since . . . it occurs when by division of the cord the arterioles are separated from the vaso-motor nerve-centre. It must be due to a direct paralyzing action of the drugs upon the coats of the arterioles—a conclusion confirmed by our knowledge of the local action of the nitrite upon muscular tissue." This is very clever and plausible *a priori* reasoning; but this style of reasoning, to be acceptable, must rest on a solid foundation. *Per contra*, Brown-Séquard, in his well-known review (*Journal de Physiologie*, Paris, 1855, tome i., p. 214) of Schiff's experiments gives the following summary of our knowledge: "1. That if there are vaso-motor elements which decussate in the spinal cord, their number is excessively small. 2. That the facts observed by M. Schiff on this subject admit of a more simple explanation. 3. That a number of the vaso-motor elements stop in the spinal cord. 4. That a tolerably large number of vaso-motor elements, coming from different points in the body, ascend as far as the tuber annulare, and some so far as the cerebellum, and to other parts of the encephalon. 5. That consequently the medulla oblongata is not the sole source of the vaso-motor elements." Then Bernard's experiments ("*Recherches expérimentales sur les nerfs vasculaires et calorifiques du grand sympathique*," *Journal de Physiologie*,

Paris, 1862, tome v., p. 389) prove conclusively that the ordinary mixed nerves contain vaso-motor fibres, which are entirely independent of the sensory and motor nerves. Moreover, it has been frequently demonstrated in cases of disease. It is therefore inconceivable how the author could for a moment have alleged, in the face of such evidence, that "by division of the cord the arterioles are separated from the vaso-motor centres. It must be due to a direct paralyzing action of the drug upon the coats of the arterioles;" consequently his further assertion, that it is "a conclusion confirmed by our knowledge of the local action of the nitrite upon muscular tissue," is scarcely worthy of a moment's serious consideration.

There are many more points that, if time and space permitted of, we could touch upon, and show that, "as no details of experiments are given, the matter simply rests upon the assertion of" (p. 214) the author. We regret that as reviewers, the author, in assuming to speak *ex cathedra*, imposed it upon us, by seeking, in the prelude of the rather flowery and far from short preface to his treatise, to impress us with the belief, that "to its performance he has brought the training, labor, and experience of years spent in the laboratory, the study, the class-room, and the hospital ward."

ART. II.--*Treatment of Nervous and Rheumatic Affections by Static Electricity.* By Dr. A. ARTHUR. Translated from the French by J. H. ETHERIDGE, M. D., Professor of General Therapeutics, Rush Medical College, Chicago. Chicago: W. B. Keen, Cook & Co., 1874.

WE can conscientiously advise young American physicians, for whom this translation has been made, not to buy this work. Older men ought to glance through it, if only for the sake of obtaining additional proof of the necessity for united effort in putting down the manifold pretensions of the day which are being made under the protecting arm of electro-therapeutics. We should not deign to notice the work at all, were it not for the position occupied by its translator. Much space is devoted to the injurious effects of all other kinds of electri-

city; "patients are aggravated" by them, etc. They are "corrosive currents saturated with violent acids." Static electricity is, however, "sucked up by the pores of the body." The author claims to be able to introduce into the economy all medicinal agents, "in small quantities, it is true, but the electric fluid which transports it is so strong, so energetic, so penetrating, that the small dose acquires a great power." Our language is plain, but the world has heard enough of this sort of thing. Prof. Etheridge certainly cannot but regard it as a curiosity of medical literature.

ART. III.—*The Sphygmograph; its Physiological and Pathological Indications.* By EDGAR HOLDEN, A. M., M. D. 8vo, pp. 169. Philadelphia: Lindsay & Blakiston, 1874.

THIS work comprises the "Stephens Triennial Prize Essay" for April, 1873, except that it has undergone some slight modifications. It is divided into three parts.

In Part I. is considered the description of the sphygmograph of Marey, and that of the author, together with the indications afforded by its use, the translation of tracings, etc., etc.

Part II. comprises an account of the practical application of the instrument, including the introduction of one hundred and seventy-seven tracings, with explanations of the conditions on which they depend. The chapters in this portion of the work are very interesting, and afford quite a dictionary for reference.

Part III. includes "investigations made with the sphygmograph into the action of certain medicines upon a healthy pulse." Four medicines were tried, viz., *Cannabis indica*, *gelseminum*, *aconite*, and *quinine*. The result of the tracing while under the influence of *gelseminum* confirms the author in his opinion of the sedative influence exerted by that drug upon the nervous and arterial systems. While the pulse undergoes a reduction in frequency, the arterial *tension* is increased. The effects upon the pulse were indicated by the sphygmograph, in all instances, before it could be determined by the fingers.

A careful study of the *tracings* of the author throughout the book impresses one with the usefulness of the instrument, in practised hands, in diagnosis and prognosis; yet, owing to the amount of study, and difficulties attending a full understanding of the subject, we cannot but think the availability of the instrument in the hands of the general practitioner must be quite limited.

The book is very well written, and is presented in fine style by the publishers, two hundred and ninety illustrations being given.

ART. IV.—*A Practical Treatise on the Surgical Diseases of the Genito-Urinary Organs, including Syphilis; designed as a Manual for Students and Practitioners, with Engravings and Cases.* By W. H. VAN BUREN, A. M., M. D., etc., etc., and E. L. KEYES, A. M., M. D., etc., etc. Pp. 672. New York: D. Appleton & Co., 1874.

THIS work appears under peculiarly favorable auspices. Several similar attempts have been made within the last few years, in the French and German—none of equal scope, so far as we know, in English—but these have remained incomplete; as, for instance, Voillemier's "*Traité des Maladies des Voies Urinaires*," only one part of which has ever appeared, and that as far back as 1868. In the mean while surgery has been progressing; facts have been accumulating, and the medical student or the practitioner, who would investigate the wide field of the diseases of the genito-urinary organs, has of necessity been obliged to rely upon general treatises on surgery, or to search through files of medical periodicals and a multitude of monographs. Such a gap occurs now and then in a lifetime in the literature of our profession, and fortunate is the man who is able to recognize and fill it at the proper moment.

In the present instance, this want of the profession could not have been supplied by better hands. The name of the senior editor is everywhere too well known as a surgeon of the highest eminence to require any indorsement; and those of us who have practised surgery in New York City for the last quarter of a century are well aware of the fact that Prof. Van Buren

has paid more attention to the surgery of the genito-urinary organs, and has done more for its advancement, than any other man among us ; and that, in any case requiring consultation, his name has been the first to suggest itself. One, therefore, expects to find, on opening this book, the ripe fruit of long and faithful observation ; and, on closing it, the reader will not be disappointed.

But to the reader aforesaid it will naturally occur that, for any man who has been overworked, in the practice of his profession, in the American fashion, for at least thirty years, to write such a book as this, bearing evidence upon every page of a thorough acquaintance with the literature *up to date* of the subjects of which it treats, is exceptional—nay, more, that it is almost an impossibility. In short, the reader will here recognize the infusion of young blood in old ; and will see that the greater part of the labor in the production of the present volume has been performed, under the guidance of a master, by the junior editor, Dr. Van Buren's able partner, Dr. Keyes, without whose assistance the work could not have appeared in its present complete form. Such a combination of experience on the one hand, and of exhaustive research on the other, cannot fail to produce a work which will satisfy both the busy practitioner and the student.

The wide field embraced in the title of this book has been conscientiously developed in every portion ; and we venture to say that many a reader will be surprised at the number and variety of the subjects treated of. ' Such comprehensiveness could not have been attained without great condensation and conciseness of language, which is a marked feature of the volume.

Our desire to announce this book at an early moment, and its late appearance before we go to press, will prevent our attempting an analysis of its contents. There are some points upon which we differ from our authors, and which we had marked for criticism ; but the pleasure of our perusal has, on the whole, been so great that it would be ungracious to find fault with matters of minor importance.

We have only to add that the chapter " On Syphilitic Diseases of the Eye " has been furnished by Prof. H. D. Noyes ;

that the press-work of the volume does credit to the publishers; and that we cordially recommend this work to our readers, as one that is an honor to American medical literature, and one which every practitioner who takes an interest in diseases of the genito-urinary organs will have in his library.

ART. V.—*Ligation of Arteries.* By Dr. L. H. FARABEUF. Translated from the French by JOHN D. JACKSON, M. D., Danville, Ky. With Engravings. Philadelphia: J. B. Lippincott & Co., 1874. 12mo, pp. 157.

THE translator has done a good service in placing this useful little work before the profession in excellent English. As a manual or hand-book of the ligation of arteries the work admirably fulfills the purpose of its author. The descriptions of the various operations are so clear and full as to render the manual one of much practical value. The engravings, of which there are forty-three, are from original drawings by the author, and are remarkably sharp, and of better mechanical execution than those ordinarily found in works on surgery.

ART. VI.—*History of the American Ambulance, established in Paris during the Siege of 1870-'71, together with the Details of its Methods and its Work.* By THOMAS W. EVANS, M. D., D. D. S., Ph. D., etc. 4to, pp. xxxviii.-694. London: Low, Marston & Searle, 1873.

THE volume before us, we are informed by the author, is the first of a forthcoming series on the sanitary regulations of the Franco-German War. It is exceedingly voluminous, being a history of the American ambulance (consisting of a tent-hospital) in Paris, during the Franco-German War; a history of army hospitals, tent-barracks, etc., etc. It is filled up with contributions from different persons; the most of the articles being of very small practical value to the general practitioner. Had the work been condensed into a reasonably small compass, it would have proved of some use to the pro-

fession as a work of reference. Inasmuch as there were only two hundred and forty-seven surgical and twenty-four medical cases treated in the "Ambulance," during the siege, the work may be considered rather pretentious.

The report of Dr. Swinburne, on the surgical history of the ambulance, although rather lengthy, is the most practical of any thing in the book. The rules given for operative procedure are taken from the author's report of surgical experience, read before the Medical Society of the State of New York, in 1863. It is rather conservative in tone, and the doctor recommends the treatment of patients with gunshot-fractures on stretchers. Dr. Johnston's medical report is to be commended for its brevity. Ten plates are introduced.

ART. VII.—*Report of the Board of Health of the City and Port of Philadelphia, to the Mayor, for the Year 1872.* 8vo, pp. viii.-124, 136. Philadelphia, 1873.

POSSIBLY it is not realized outside the profession how much is being done to improve the standard of health in various communities by physicians, by recommendations either as members of boards of health or as private practitioners. The recommendations of the Board of Health of Philadelphia, for 1872, seem to be very appropriate, and their duties well performed. Among the suggestions of the board is that for establishing free parks and camping-grounds for the poor of the cities, as first suggested by Dr. Toner, of Washington, D. C.

The "Report" of the board shows an unusual mortality for the year 1872, which is accounted for by the prolonged season of heat, causing diarrhœal diseases, and by the small-pox epidemic of that year, which was of more than ordinary virulence. The compilers of the report have devoted considerable space to the history and discussion of this epidemic.

The "Appendix," comprising the Report of the Municipal Hospital, except the mortality reports and legal enactments, is wholly devoted to the consideration of small-pox and vaccination, and is contributed by Dr. W. M. Welch.

The volume contains numerous tables of mortality, charts,

etc., which will be of much value to those who like to search statistics; besides a great deal of matter of practical interest to the entire profession.

ART. VIII.—*Lectures on Fever, delivered in the Theatre of the Meath Hospital and County of Dublin Infirmary.* By WILLIAM STOKES, M. D., D. C. L., Oxon., etc., F. R. S. Edited by JOHN WM. MOORE, M. D., F. K. Q. C. P., etc. 8vo, pp. xxiv.—459. London: Longmans, Green & Co., 1874.

WE are not very favorably impressed with the value of this work. In addition to being diffuse, it lacks perspicuity in differentiation, and the essentials of a systematic treatise.

The continued fevers are treated as a whole; typhoid, typhus, yellow fever, and epidemic cerebro-spinal meningitis, are supposed to constitute a single genus, with certain variations giving rise to the varied phenomena witnessed in the several forms. The author also thinks the type of disease has changed within the remembrance of some of the older practitioners, so that the treatment formerly adopted is supposed to be in conformity with sound pathological views.

Without discussing these questions, we beg to dissent from the views of the author, both in regard to the *identity* of the above-named diseases, and in regard to the *change of type*, and consequently upon the *principles* on which the older methods of treatment were employed.

The *treatment* of the continued fevers as at present recommended by the author is in the main judicious, and in accordance with the views of modern authorities.

BOOKS AND PAMPHLETS RECEIVED.—A Manual of Toxicology, including the Consideration of the Nature, Properties, Effects, and Means of Detection of Poisons, more especially in their Medical-legal Relations. By John J. Reese, M. D., Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania, etc. Philadelphia: J. B. Lippincott & Co. 8vo, pp. 507.

The Conditions of the Conflict. An Oration delivered before the Medical Society of the County of Kings, Brooklyn, N. Y., at its Fifty-second Anniversary, February 24, 1874. By Alexander Hatcher, M. D.

The Treatment of Syphilitic Diseases by the Mercurial Vapor-Bath. With numerous Cases of Clinical Observations. By Langston Parker, F. R. C. S. L., Consulting Surgeon to the Queen's Hospital, Birmingham, etc. Compiled from the fifth London edition by John W. Foye, M. D. Boston: A. Williams & Co., 1874.

A Practical Manual of the Treatment of Club-Foot. By Lewis A. Sayre, M. D., Professor of Orthopædic Surgery in Bellevue Hospital Medical College, etc., etc. Second edition, enlarged and corrected. New York: D. Appleton & Co., 1874.

Trial of Emil Lowenstein for the Murder of John D. Weston, at West Albany, August 5, 1873. With the Evidence, Arguments of Counsel, Charge of Court, in full. Albany: William Gould & Son, 1874. Pp. 352.

The Science of Homœopathy; or a Critical and Synthetical Exposition of the Doctrines of the Homœopathic School. By Charles J. Hempel, M. D. New York: Boericke & Tafel, 1874.

The Mutual Relations of Druggists and Physicians. An Address before the Graduating Class of the Massachusetts College of Pharmacy. By Charles E. Buckingham, M. D.

Climate in Pulmonary Consumption, and California as a Health Resort. By Lewis Rogers, M. D. Reported from the *American Practitioner* for May, 1874.

The Anatomical, Pathological, and Surgical uses of Chloral. By W. W. Keen, M. D. Reprinted from the *Philadelphia Medical Times*.

Special Rules for the Management of Infants during the Hot Season, recommended by the Obstetrical Society of Philadelphia.

Transactions of the Medical Society of the District of Columbia. To be issued quarterly. Vol. i., No. 1. April, 1874. Pp. 24.

The Psychology of Skepticism and Phenomenalism. By James Andrews. Glasgow: J. Maclehose. Pp. 59.

Herpes Gestationis; a Rare Affection of the Skin, peculiar to Pregnancy. By L. D. Bulkley, M. D.

Twenty-fifth Annual Announcement of the Woman's Medical College of Pennsylvania, 1874-'75.

Annual Report of the Board of Health of the City of Pittsburg, for the Year 1873. Pp. 94.

Fifth Annual Report of the Trustees of the Willard Asylum for the Insane, for the Year 1873.

Forty-eighth Annual Report of the Massachusetts Charitable Eye and Ear Infirmary, 1874.

Syphilitic Membranoid Occlusion of the Rhina Glottidis. By Louis Elsberg, M. D.

A Report on the Treatment of Fractures. By J. B. Hamilton, M. D., Kane, Illinois.

Third Annual Announcement of the Kansas City College of Physicians and Surgeons.

Catalogue of the Boylston Medical Society, of Harvard University. Pp. 36.

Report of the Wills Ophthalmic Hospital, Philadelphia, for the Year 1873.

Transactions of the Medical Society of New Jersey, 1873. Pp. 224.

Reports on the Progress of Medicine.

SURGERY.

PREPARED BY SAMUEL B. WARD, M. D.

Cancer.—This has been the subject of a debate, extending over two entire sessions, in the London Pathological Society, and participated in by its most prominent members.

Mr. Campbell De Morgan, the well-known surgeon of Middlesex Hospital, who delivered the introductory address, confined himself to the question, "What are the relations of cancer to the organism, whether to its natural or its morbid condition?"

The various views held by different authors as to the origin of cancer were formulated under five heads:

1. That a cancer-tumor is the expression of a specific blood-condition; standing in the relation to this blood-condition of a secretion to its gland.
2. That a morbid material is present in the blood, which, coming into relation with an appropriate tissue, enters into combination with it and causes the growth of the tumor.
3. That the disease has its origin in the constitution at large, the tumor being only its local manifestation.
4. That the disease is in its origin purely local.
5. That, though local in development, there are general or constitutional conditions favoring its occurrence.

The speaker maintained the view that, "though local in its origin, there is in some, possibly in all cases, a predisposition to the disease, which may possibly be distributed through the system, but which more probably has its seat in some among the tissues the body.

The arguments against its being a blood-disease were, that there exists no indication of any diseased blood-condition prior to the appearance of the tumor; that after the removal of a growing cancer the patient may remain in perfectly good health, having no return of the disease; that when cancer returns after removal, it rarely appears at the usual seat of election: for example, after the removal of a scirrhus of the breast, the disease usually reappears, not in the opposite mamma, but in the skin, connective tissue, lymphatic glands, and muscles in the vicinity of the previous tumor; that in patients with cancerous ecchecia wounds inflicted on various parts of the body, remote from the seat of the tumor, will heal in the usual manner, while new growths are springing up elsewhere.

The speaker's own view as to the local origin of the disease was then ably supported by arguments based on facts which had come within his own experience, and borrowed from comparatively recent advances in physiology and pathology.

An explanation was next offered of the manner in which cancers, when once formed, infect neighboring and distant parts, and ultimately contaminate the system. It has been recently observed that cancer-cells, like white blood-corpuscles, show amœboid movements, and can thus travel independently in tissue-spaces, or even permeate delicate membranes. By the infiltration of surrounding tissues the tumor itself grows; after penetrating the net-work of lymphatics at the immediate site of the disease, the cells may be carried along in these vessels and so involve the neighboring glands; and, lastly, having gained access in the same manner to the blood-vessels, they may be carried along in the circulation, and so contaminate internal organs, these secondary growths being precisely analogous to the metastatic abscesses of pyæmia. Thus we can account for the diffusion of cancer, when once formed, without calling to our aid a preëxisting or concurrent disease of the blood.¹

The point was also discussed as to whether there is any essential difference, genetically, between cancer and other malignant growths, or between these and any tumor whatever. The vast difference in behavior and structure was readily admitted; but was claimed to be no greater than between the *acarus folliculorum* and *trichina spiralis*, both of which are simple parasites. Mr. De Morgan thinks that no line of distinction can be drawn genetically between cancer and other tumors.

Mr. Simon followed, the term "cancer" being used by him to include scirrhus of the breast, sarcoma of the femur, and epithelioma of the lip, and not in the modern anatomical acceptation of the word. He was of the opinion that it is a specific disease, bearing relation to tubercle and less closely to syphilis—the three constituting a distinct group of diseases.

Mr. Jonathan Hutchinson said that his views agreed very nearly with those of Mr. De Morgan, and considered that hopes of cure rested very much on our belief in the local origin of cancer. He was not at all convinced of the specificity of cancer, but believed that, in a family having a cancerous tendency, one member might be the subject of benignant tumors, and another of warts; that scirrhus in the mother may be followed by melanosis in the child; and that he had himself published directions, by following which, an innocent sore might be converted into a cancer. These facts constituted in his estimation an additional argument in favor of the essential oneness of malignant tumors.

Sir James Paget was the next speaker. He accepted Mr. De Morgan's opinions; but, while the latter exalted the local element, he himself held that we must admit both elements. We cannot doubt, he said, that there are certain cases where no constitutional cause can be found. When the scar of an old burn becomes cancerous, or when cancer of the lip develops from a constant source of irritation, it seems as if so little predisposition existed, that a tissue specially prepared for its development was necessary. When we trace the lists of morbid growths gradually from the simple fatty tumor at one end to cancer at the other, we have a difficulty in believing that cancer is a constitutional disease. But when we look at cancer in particular, we must admit a different pathology; we must say that, in the great group of tumors, there is a constitutional element at one end, and at the other little or none.

¹ Mr. De Morgan then asked, "Why is it that cancer, if a blood-disease, should be so preëminently a disease of women?" Other tumors are nearly as prevalent in one sex as in the other, while ninety per cent. of the cancers are situated in the uterus and mammary gland. "Does it not look as if the mere tissue-changes, dependent on the peculiar vital conditions of these organs, were the starting-points of the disease?"

As to the inheritance of cancer, Sir James wished to call especial attention to the manner in which it showed itself. As to the frequency of this origin he believed it could be traced once in four cases in hospital practice, and once in three in private practice, where the family history was better known. He also believed that it occurred more frequently than could be positively ascertained, because parents not unfrequently died of cancer of the internal organs, the diagnosis of which had been mistaken; and other parents died of some accidental disease before cancer was developed, and yet transmitted the tendency to their offspring. It is true that local diseases—fatty tumors, cutaneous cysts, and malformations—are likewise inherited, but not in the same manner. These latter appear in corresponding tissues in the offspring; while the peculiarity of constitutional diseases is that they do *not* necessarily occur in the same organ or tissue in a child as in the parent. One case Sir James had seen, in which a mother died of cancer of the stomach; one daughter of cancer of the stomach, and another of cancer of the breast. Of her grandchildren one died of cancer of the breast, and one of cancer of the bladder, one of cancer of the rectum, and one of cancer of the stomach. The strong analogy was then shown, in this respect, between cancer and diseases which all admit to be constitutional—gout, syphilis, scrofula, and tuberculosis. This constituted the speaker's first argument in favor of the existence of a constitutional element in the production of cancer.

Again, if we know any thing in pathology, we know the effect of an injury to a tissue to be inflammation, induration, overgrowth, or, at most, the production of some growth like the tissue injured. Any marked deviation from this course argues a constitutional element at work; for example, if a knee-joint suppurates, instead of healing, after a moderate injury, we say the patient is scrofulous. Now, cancer follows injuries in so many cases, and so immediately in the relation of cause and effect, as to constitute the second argument in favor of the existence of a constitutional tendency.

The almost constant recurrence of cancer after removal constituted Sir James's third argument. He stated that, among cancer patients who were operated upon, not more than one in five hundred were fortunate enough to have no recurrence of the disease, and the second tumor is extremely apt to choose for its site some distant organ. Other morbid growths, especially fibro-recurrent tumors, are prone to return. Sir James had removed one eighteen times from the thigh of a young woman, and nothing short of the removal of the limb would eradicate the disease; still the growth remained purely local. Now, there is no such case in the whole history of cancer. The speaker stated distinctly that he did not wish to depreciate the local element in the production of cancer; but, if compelled to express an opinion, he would say that, of the two, the constitutional element was the more important.

Whether this constitutional tendency consisted of a morbid element in the blood he would not say; yet we do well to hold that cancer owes part to the condition of the blood. All of Mr. De Morgan's objections to this theory held equally well in the case of other diseases, commonly believed to be in the blood-condition: 1. That there was no indication of such blood-disease prior to the local outbreak. Who feels so well as the subject of gout just before an acute attack? 2. That a wound may heal normally in a cancerous patient. Sir James has known an attack of gout to follow an operation without affecting the healing of the wound. 3. That there are long intervals of health in those affected with cancer. This is precisely what occurs in gout, syphilis, tuberculosis, or any other blood-disease. 4. That cancer does not affect secondarily the part it affects primarily. But the same holds true of gout and syphilis. The last objec-

tion is that cancer predominates in women. Cancer is a disease of degeneration, and we are misled if we think it any thing else; the exceptions prove the rule. The breast and the uterus are the subjects of senile decay at forty or fifty, and this is the sole cause of the greater frequency of cancer in women: exclude the affections of these organs, and cancer is more common among men.

As to treatment, Sir James said, "All our attempts to cure cancer locally have totally and entirely failed." As far as therapeutics have yet gone, they have been especially successful in providing remedies for constitutional diseases. The speaker "concluded with the hope that, considering the great importance of the constitutional element in cancer, we shall not try to depreciate it either in the question of the pathology of the disease, or in the search for its final remedy."

Mr. Henry Arnott thought that the point which the previous speaker had raised concerning the local reappearance of "recurrent fibroid tumors" and the reappearance of cancer in distant organs, might be much elucidated by glancing at the microscopical construction of morbid growths. In scirrhus the cells lie quite loose in an alveolus, and may be hurried away at any time; in a chronic mammary tumor, on the other hand, the epithelial cells are in close contact, and not easily carried away. Again, the position of tumors affects their malignancy; e. g., an epithelioma on the bridge of the nose proves very slowly malignant, while the same disease on the frænum of the tongue, where warmth and moisture are present, proves fatal in a year. Admitting some constitutional element in cancer, we must admit something similar in simple tumors; and if we bear this in mind, and consider at the same time the anatomical peculiarities and position of certain tumors, we need not be driven to search for any hypothesis of a blood-disease, in the sense of syphilis or gout.

Sir William Gull thought that the term "constitutional" might be applied to the ovum; but, after the various tissues and organs were differentiated, what was previously "constitutional" became "local." Again, when one comes to talk of a blood-disease, one is lost in conjecture, especially if one explains it by gout. There is no proof that gout is a blood-disease, or typhoid fever a blood-disease. The blood may convey the disease; but the blood itself is a very indifferent fluid, and as such cannot present the morbid phenomena of disease. He did not participate in Sir James Paget's hope that we may find a cure for cancer as we have for syphilis.

Dr. J. Payne closed the debate with some account of the microscopy of cancer, and claiming more indulgence for histologists than they had received from some of the speakers in the present discussion.

Translations.

Antiseptic, Antifermentative, and Disinfectant Properties of Perchloride of Iron.—The following is a *résumé* of these properties, discovered by the eminent chemist Carlo Paresi:

1. Meat, fish, etc., immersed in a dilute solution of perchloride of iron, are preserved without putrefaction. Removed from the bath and dried in the air, they assume a stony hardness, and become slightly brown and inodorous.

2. The addition of a small quantity of perchloride of iron to cow's milk causes the immediate separation of the caseine in the form of a flaky magna; and, exposed to the air, the caseine, the butter, and the serum, are exempt from decomposition, even after the lapse of a considerable time.

3. The addition of a small quantity of perchloride of iron to urine causes a white precipitate. Exposed to the air at the ordinary temperature, even for a considerable time, there is no development of ammonia from the urea, and the urine remains inodorous.

4. Blood recently drawn from the veins, to which the iron is added, immediately forms a compact clot, and, exposed to the air, is preserved without putrefactive fermentation.

5. The seeds of the ceralia immersed for twelve hours in a solution of perchloride of iron, and afterward planted, do not germinate.

6. The addition of ammonia in excess to the solution of perchloride of iron causes the precipitation of peroxide of iron, with the immediate disappearance of the ammoniacal odor. Here, besides the precipitate of the peroxide of iron, chloride of ammonia is also formed and remains in solution. The excess of ammonia is no longer perceptible, in consequence of the *sui generis* disinfecting action of the perchloride of iron.

7. The sulphate of potassa, dissolved in water, immediately presents a yellowish-red precipitate, on the addition of perchloride of iron, and the odor of the hydro sulphuric acid gas disappears.

8. A solution of perchloride of iron, poured on to paper amidorized with iodide of potash, produces a blue color at once. Paper saturated with tincture of guaiac, to which it is added, immediately assumes the characteristic azuro tinge. "If we are not deceived, these reactions are produced by ozone, which exerts a great hygienic influence on the animal organism in all those contingencies in which the air is contaminated with parasites, deleterious gases, and miasmatic emanations."

9. Mustard or bitter almonds, reduced to a liquid paste with perchloride of iron, are prevented from forming the essential oils characteristic of these substances.

10. The solution of perchloride of iron mixed with wheat flour and yeast prevents the bread-fermentation; with the must of grapes, the vinous fermentation; and with sugar or honey, the alcoholic fermentation.

11. Finally, perchloride of iron placed in contact with metallic mercury, and properly rubbed in a marble mortar, is rapidly reduced into minute particles of a bluish color; to this is added axiunge, and the rubbing continued for about a quarter of an hour. An extremely well-prepared mercurial ointment in which, even with a strong glass, no particle of metallic mercury can be seen, is thus obtained. The iron may be washed out with water.—*La Nuova Liguria Medica*, February, 20, 1873.
G. R. C.

Contributions to the Physiology of the Pneumogastric.—S. Arloing and L. Tripier have published an interesting work on this subject, and have arrived at the following conclusions:

1. A section of the cord, posterior to the spinal bulb, diminishes considerably the excitability of the pneumogastric.

2. From a functional point of view, there is a notable difference between the two nerves, the right acting more energetically on the heart than the left.

3. The converse is true for the mechanical phenomenon of respiration; excitation of the left nerve modifies more profoundly the movements of the thorax than excitation of the right.

4. The arrest of the heart's action is more complete when the galvanization is applied only to the peripheric end, rather than in the course of the nerve.

5. Galvanization of the peripheric end causes arrest of the heart in diastole, while galvanization in the course tends to arrest it in systole. The pneumogastric, therefore, governs the action of the heart.

6. The movements of the heart which are produced by galvanization of the vagi are feebler than those before excitation; notwithstanding this feebleness, the pulse becomes stronger, because there is less tension in the arterial system.

7. It is impossible to embrace in a general formula the influence of galvanization of the pneumogastric on respiration.

8. Galvanization of the peripheric end causes respiratory

movements, probably because the pneumogastric is also sent to the periphery of the recurrent fibres.

9. Section of the pneumogastric is accompanied by feebleness in the movements of the thorax of the corresponding side.

10. Finally, it is possible that one of the pneumogastrics controls the function of digestion.—*Arch. de Phys.*, 1872. *Lyon Médical*, May, 1873. E. F.

The Urine in Addison's Disease.—Rosenstirn (Würzburg) has carefully and uninterruptedly, for many days, examined the urine of two patients in Bamberger's clinic, who were affected with Addison's disease. Both were men, one seventy-two and the other sixty years of age. Their appetite was good, and their diet was regulated in the following manner: In the morning, soup; at noon, soup, vegetables, and meat; in the evening, soup and meat. Notwithstanding the richness of this diet, Rosenstirn has found a considerable diminution in the quantity of urea excreted, which never exceeded twenty-four grammes in the twenty-four hours. A few times it fell to thirteen grammes, while in three healthy individuals, aged respectively twenty-five, sixty-seven, and eighty-two years, submitted to the same regimen and examined comparatively, the quantity excreted in the twenty-four hours never fell short of twenty-six grammes.

Another notable fact is the sensible augmentation of indigo in the urine of patients affected with Addison's disease. In one of the patients, Rosenstirn found the mean to be 64.5 milligrammes in 100 of urine, and in the other 75.3, that is, eleven or twelve times the normal quantity.

Thus, in Addison's disease, there is a very considerable diminution in the activity of the molecular changes. Is this owing to alteration in the supra-renal capsules, so richly supplied with nerves? Has the pigment deposited under the skin its origin in indigosuria? Is it admitted that the diverse symptoms occurring in Addison's disease are the result of a blood-affection arising from its incomplete purification? This hypothesis has tended to establish a comparison between the etiology of these accidents and uræmia, with which the last stage of Addison's disease has much similarity.—*Archiv de Virchow*, Nov., 1872. *Lyon Médical*, April, 1873. E. F.

Hypodermic Injections as Derivatives.—Dr. A. Luton, in an article in the *Mouvement Médical*, No. 39, 1873, considers that various irritant substances may be injected under the skin with advantage, for producing counter-irritation. The degree of fluxion which immediately follows the injection of various irritants differs very much, and is not always proportionate to the intensity of the artificial irritation. Some substances which cause great determination of blood to the parts are not powerful irritants, in this sense, that they do not necessarily lead to suppuration, or the formation of an eschar. The great advantage of the method proposed is, that the serosity is not lost to the economy, as in bleeding, but is rather called to a particular part of the body, and is refunded as soon as the danger is passed. Alcohol, injected under the skin at different degrees of concentration, especially at 50°, is an excellent determinant, its contact is not too painful, and in the conditions mentioned it provokes neither abscess nor slough. Various tinctures thus used appear to owe their action to the alcohol they contain, with the exception of tincture of iodine, which has a special action. Turpentine is good, but its action cannot be diminished by dilution, and it causes slight suppuration. A saturated solution of common salt, injected in quantities of one to three grammes, is followed by congestion, with very considerable tumefaction, out of proportion to the quantity of salt employed. It is quite painful, and may cause suppuration. Solutions of various neutral salts produce analogous effects, all founded on the primary irritation and the accompanying exosmosis. Tannin is not very irritant, but causes very energetic fluxion. Weak solutions, one-tenth or one-twentieth for example, injected in a dose of one gramme, under the skin of the forearm, soon cause a large tumor with diffuse limits and soft consistence. The pain is very slight; suppuration never follows: simple resolution is the constant mode of termination at the end of two or three days. Dr. Luton first used the tannin-injections for their revulsive effects on the stomach. Obstinate diarrhœas, hæmoptysis, etc., have thus been rapidly checked. It is best to make these injections in parts where the cellular tissue is abundant, and affords room for the collection of serum.

G. R. C.

Miscellany.

Texas State Medical Association.—The sixth annual meeting of this Association was held in Dallas, April 6th, Dr. D. F. Stuart, of Houston, President, in the chair.

An appropriate address of welcome was made by Dr. R. M. Jones, of Dallas, which was replied to by Dr. Ashbel Smith. On motion of Dr. Brown, of Waco, Vice-President, it was resolved to appoint a committee to report on the legislative measures that have been adopted to regulate the practice of medicine in the State.

Medical societies from the following counties were admitted to fellowship: Burleson, Coryell, Grayson, Harrison, Hill, Jefferson, Johnson, Lamar, and Washington. Also the Dallas City and Waco City Societies.

Dr. Ross, from the Committee on Yellow Fever, made a full and interesting report, which was referred to the Publishing Committee.

Dr. T. J. Heard addressed the Association on the subject of the treatment of yellow fever.

On motion of Dr. Ryan, of Caldwell, it was resolved that a committee of three be appointed to draft a law regulating the sale of drugs and patent medicines.

The following officers were elected for the ensuing year: President, Dr. Clapton, of Jefferson; Vice-Presidents, Dr. T. D. Wooten, of Paris, and Dr. Oliver, of Dallas; Recording Secretary, Dr. East, of Austin; Treasurer, Dr. Landon.

On motion of Dr. Heard, General Robinson was appointed chairman of a committee to report on all matters pertaining to the sanitary interests of the State, at the next meeting, which will be held in Austin.

Appointments, Honors, etc.—Dr. J. Welch Jones has been elected Superintendent, for the ensuing two years, of the State Lunatic Asylum of Louisiana. Dr. T. H. Andrews has been elected Demonstrator of Anatomy in the Jefferson Medical College. The following changes have been made in the

Faculty of the Medical College of Ohio: Prof. James Graham, M. D., to be Emeritus Professor of Theory and Practice of Medicine, and Clinical Medicine; Prof. Roberts Bartholow, M. D., has been transferred to the chair of the Theory and Practice and Clinical Medicine; Prof. Samuel Nickles, M. D., transferred to that of Materia Medica and Clinical Medicine; Dr. H. A. Clark to be Professor of Chemistry. The Medical Staff of the New York Founding Asylum consists of Drs. J. B. Reynolds, J. Lewis Smith, Charles C. Lee, and Joseph O'Dwyer.

Dr. Alfred Meadows has been elected a corresponding member of the Society of Physicians of St. Petersburg. Sir Alexander Armstrong has been reappointed, for a further period of five years, Medical Director of the British Navy. It is proposed in the National Assembly of France to grant M. Pasteur a pension for life as a recognition of the value of his investigations relating to the manufactures of wine, vinegar, beer, and silk. Rokitansky and Hyrtl, having had public demonstrations in their honor, preparations are now being made for a similar celebration of the completion of Brücke's twenty-fifth year of service as professor.

Journalistic Notes.—We have received the table of contents of the first number of the *Archives of Electrology and Neurology*, edited by George M. Beard, M. D. F. W. Christern announces *The Psychological and Medico-legal Journal*, a monthly publication, to be edited by Drs. Wm. A. Hammond and John B. Cross. The first number will be issued in July. The second number of the *Chicago Journal of Nervous and Mental Diseases*, abundantly fulfills the promises of its editors. Prof. Jewell's lectures on the "Pathology of the Vaso-motor Nervous System" show much patient research. We are glad to see in this number the address, in full, of Prof. Austin Flint, Jr., on the "Mechanism of Reflex Nervous Action in Normal Respiration," delivered before the New York Society of Neurology and Electrology, February 16, 1874, together with the reply of Prof. Dalton. The *Detroit Review of Medicine and Pharmacy* is to be enlarged by the addition of sixteen pages to each monthly issue. The *Archives de Toxi-*

ecologie is the title of a new monthly journal, published in Paris, and devoted to "Diseases of Women and Infants." It is conducted by Drs. Dessaul, Bailly, Bernutz, Hervieux, and others. A new weekly journal, the *Centralblatt für Chirurgie*, has been established in Leipsic. Drs. Lesser, Schedl, and Tillmanns, are the editors.

Annual Prize of the American Journal of Obstetrics.—Dr. B. F. Dawson, late editor of the above journal, offers an annual prize of one hundred and fifty dollars in gold for the best essay on a subject to be announced in the May number of the journal each year. The subject for this year is "Congenital Deformities, and Diseases depending on Maladies of the Uterus or Membranes." The competing essays must be sent to Messrs. Wm. Wood & Co., 27 Great Jones Street, New York, on or before April 15, 1875. The names of the authors must accompany the manuscripts in sealed envelopes. The essays may be written in the English, French, or German language; and that one to which the prize may be awarded by the censors, whose names will accompany and vouch for the verdict, is claimed for first publication in the *Journal of Obstetrics*.

Medical Association of Georgia.—The twenty-fifth annual meeting of this Association was held in Thomasville, April 1st, Dr. W. F. Westmorland presiding. The meeting was largely attended, and, after the business before it had been disposed of, the following officers were elected for the ensuing year: President, Dr. De Saussure Ford, of Augusta; Vice-Presidents, Dr. R. L. Roddy, of Forsyth, and Dr. John M. Boring, of Atlanta; Censor, for five years, Dr. R. B. Ridley, of La Grange. The President appointed Dr. K. P. Moore, of Knoxville, Oester of next meeting, which will be held in Savannah, on the third Wednesday in April, 1875.

Alabama State Medical Association.—The sixth annual meeting of this Society was held in Selma April 13th, Dr. George A. Ketchum, of Mobile, President, in the chair. The attendance was large, and the proceedings were of unusual interest. The following officers were elected for the ensuing year: Dr. J. S.

Weatherly, of Montgomery, President ; Dr. J. J. Dement, of Huntsville, First Vice-President ; Dr. R. D. Webb, of Sumter, Second Vice-President ; Dr. B. H. Riggs, of Selma, Secretary ; Dr. W. C. Jackson, of Montgomery, Treasurer ; Dr. J. B. Cochran, of Mobile, Dr. James Guild, of Tuscaloosa, Dr. R. F. Michel, of Montgomery, Dr. G. E. Kumpe, of Leighton, and Dr. N. D. Richardson, of Athens, Censors ; Dr. T. O. Summers, of Greensboro, Orator ; and Dr. W. A. Johnson, of Uniontown, alternate Orator. The next meeting will take place in Montgomery.

Tennessee State Medical Society.—The forty-first annual session of this Association was held in Chattanooga, April 7th, Dr. Thomas Lipscomb occupied the chair, in the absence of the President, Dr. J. J. Abernathy. After organization and the election of new members, Dr. J. B. Murfree, of Murfreesboro, was elected President for the ensuing year, and Dr. D. Y. Green, of Chattanooga, Dr. J. T. Evans, of Union City, and Dr. T. B. Buchanan, of Nashville, Vice-Presidents.

After the regular business, and the hearing and discussion of several excellent papers, the Society adjourned to meet in Nashville the first Tuesday in April, 1875.

The American Journal of Obstetrics.—Dr. B. F. Dawson announces that he has disposed of this journal to Messrs. William Wood & Co., and that he has resigned the editorial management in favor of Dr. Paul F. Munde, who will hereafter have sole charge. Dr. Dawson recounts in a graceful editorial his connection with the journal during the six years of its existence, and reminds his readers that its present success has been attained through much tribulation, and in spite of many obstacles. We trust the retiring editor has reaped profit as well as honor from his arduous labors, and wish his successor abundant encouragement, knowing him to be eminently qualified for the task he has assumed.

Kentucky State Medical Society.—The nineteenth annual meeting was held in Paducah, April 7th, Dr. Joseph W. Thompson, of Paducah, President, in the chair. Papers were

read by Drs. E. McLellan, U. S. A., R. F. Logan, Richardson, E. S. Gaillard, A. McFarland, and others. Dr. A. B. Cook, of Louisville, was reinstated in membership. Reports were presented by Dr. D. W. Yandell, S. A. Foss, D. S. Reynolds, J. A. Larrabee, R. H. Gale, W. Bailey, H. Wilson, and C. S. Fenner. Resolutions were passed in favor of the bill now before Congress to increase the efficiency of the Medical Department of the Army.

Breathing in Rarefied Air.—M. Paul Bert describes, in *L'Institut*, a series of experiments made on himself in a receptacle in which the diminution of pressure of air was carried to twenty-five centimetres—equivalent to an altitude of nearly a mile and three-quarters. He found he could avoid all the ill effects of this diminished pressure by breathing a mixture of 60 per cent. oxygen with atmospheric air. This discovery has already been made trial of by aéronauts, who will, by its means, be able to attain heights hitherto impossible.

Vaseline.—The new product of petroleum to which this name has been given promises to come into use as a vehicle for various emollient preparations, for which it appears to possess some peculiar advantages. It is a solid, semi-transparent jelly, neutral, and free from taste or odor, and it is said to undergo no change by keeping. It becomes liquid at a temperature of 95° Fahr. The manufacturers state that it is prepared simply by the evaporation of crude petroleum, and filtering the residue through animal charcoal.

Bellevue and Charity Hospital Appointments.—The following constitute the resident staff of these hospitals, as recently appointed:

Bellevue: Fred. S. Dennis, A. B., M. D., Junior Assistant; George F. Bates, M. D., G. M. Stoeckel, M. D., G. R. Metcalfe, A. B., M. D., J. M. Hills, A. B., M. D., F. C. Almsworth, M. D., R. F. Dearborn, A. M., M. D., Provisionals.

Charity: Dr. M. A. Alvarez, J. R. Joinérez, Nicholas C. Jobs, Francis Hustace, Wm. D. Spencer, James J. Delaney, Edward T. Ely, and Edward M. Hill.

Reception Hospital Appointments.—The following are the appointments made by the Commissioners of Public Charities and Correction, on recommendation of the Board of Medical Examiners :

Park Reception Hospital: M. B. Earley, M. D., House-Surgeon; Wm. B. Hull, M. D., First Assistant; M. L. Wengler, M. D., Second Assistant (*Externe*); T. E. Wilson, M. D., Ambulance-Surgeon.

Ninty-ninth Street Reception Hospital: W. N. Campbell, M. D., House-Surgeon; A. H. Gorlet, M. D., Assistant; C. A. Nolan, M. D., Ambulance-Surgeon.

Corrections.—In the report of proceedings of the New York Pathological Society, in the last number of the JOURNAL, the specimens presented and remarks made by Dr. Salvator Caro were attributed, by an error of the reporter, to Dr. Carroll. An error occurred also in the report of the Society of Neurology and Electrology, by which Dr. Van Bibber was made to say that a patient had taken "eighty grains of morphia at a dose." It should have been eighty grains "within twenty-four hours."

Encyclopædia of the Practice of Medicine.—Messrs. Wm. Wood & Co. announce that they will publish by subscription a translation of the "Encyclopædia of Medicine," now in course of preparation by Prof. Ziemssen, of Erlangen, and other distinguished professional gentlemen. It is proposed to publish three or four volumes a year until the fifteen are completed. The first volume will treat of "Acute Infectious Diseases."

Medical and Surgical Memoirs.—Prof. Joseph Jones, of New Orleans, announces the publication, by subscription, in three volumes, of a work entitled "Medical and Surgical Memoirs, containing Investigations on the Nature and Treatment of Various Diseases, during a Period of Twenty Years." The first volume will be ready about January 1, 1875.

American Gynæcology abroad.—We are pleased to notice that Prof. Thomas's work on "Diseases of Women," which

has already been published in the German language, is now being translated into French, and will shortly be issued in Paris. Permission has been applied for, to translate it into Italian also.

Pharmacy in California.—The California Pharmaceutical Society has made application to the Legislature for an appropriation of twenty-five thousand dollars to be used for the instruction of students in pharmacy. We do not know whether the Society is likely to obtain the grant, but the object is a good one. The medical profession and the public have an equal interest in the thorough education of those who dispense and deal in medicines.

Another International Sanitary Congress.—The Cabinet of St. Petersburg proposes to secure a meeting of medical representatives of the various European powers, in Vienna, for the revision of measures hitherto taken to prevent the spread of cholera.

Education of Deaf-Mutes.—The Legislature of Pennsylvania has passed an act appropriating two thousand dollars for the support and education of deaf-mutes—the same to be expended in the hospital at Pittsburg.

Medical Society of New Jersey.—The one hundred and eighth annual meeting of this Society was held at Long Branch, May 26th.

Penitentiary Reform.—The third meeting of the National Penitentiary and Reformatory Congress was held in St. Louis, May 14th.

Army Intelligence.

Official List of Changes of Stations and Duties of Officers of the Medical Department, United States Army, from April 14, 1874, to May 13, 1874.

BAXTER, J. H., Chief Medical Purveyor.—To report to the Surgeon-General for assignment to duty. S. O. 83, A. G. O., April 16, 1874.

ABADIE, E. H., Surgeon.—Leave of absence extended sixty days on surgeon's certificate of disability. S. O. 101, A. G. O., May 8, 1874.

BAILY, E. J., Surgeon.—Relieved from duty in the Department of California, and to report to the commanding officer, Department of the Columbia, for duty as Medical Director of that Department. S. O. 96, A. G. O., May 2, 1875.

COOPER, GEORGE E., Surgeon.—Relieved from duty in Department of the Columbia, and to report to the commanding general, Department of California, for assignment to duty. S. O. 96, C. S., A. G. O.

BAILY, J. C., Surgeon.—Assigned to duty at Frankfort, Ky. S. O. 61, Department of the South, April 20, 1874.

WRIGHT, J. P., Surgeon.—Relieved from duty in Department of Dakota, to proceed to Carlisle, Pa., and, on arrival, report by letter to the Surgeon-General. S. O. 96, A. G. O., May 2, 1874.

TOWN, F. L., Surgeon.—Relieved from duty in Military Division of the Atlantic, and to report to the commanding general, Department of Texas, for assignment. S. O. 96, C. S., A. G. O.

WEEDS, J. F., Surgeon.—Assigned to duty at Fort Abraham Lincoln, D. T. S. O. 83, Department of Dakota, April 29, 1874.

MCCLELLAN, ELY, Assistant Surgeon.—To carry out provisions of joint resolution of Congress, approved March 25, 1874, on the recommendation of the Surgeon-General, detailed to inquire into and report upon the causes of epidemic cholera. S. O. 85, A. G. O., April 18, 1874. To take station at Louisville, Ky., and from that place visit the towns and localities at which cholera prevailed during the year 1873, as designated in instructions given him by the Surgeon-General. S. O. 103, A. G. O., May 11, 1874.

TILTON, H. R., Assistant Surgeon.—Relieved from duty in the Military Division of the Atlantic, and to report to the commanding general, Department of Texas, for assignment. S. O. 96, C. S., A. G. O.

BROWN, J. M., Assistant Surgeon.—Relieved from duty in Department of Texas, to proceed to Philadelphia, Pa., and,

on arrival, report by letter to the Surgeon-General. S. O. 96, C. S., A. G. O.

GARDNER, WM. H., Assistant Surgeon.—Assigned to duty as Post Surgeon at Fort Union, N. M. S. O. 32, District of New Mexico, April 14, 1874.

LIPPINCOTT, H., Assistant Surgeon.—Assigned to duty as Post Surgeon at Fort Whipple, A. T. S. O. 35, Department of Arizona, April 9, 1874.

DE WITT, C., Assistant Surgeon.—Assigned to duty at Humboldt, Tenn. S. O. 61, C. S., Department of the South.

DE HANNE, J. V., Assistant Surgeon.—Relieved from duty in Department of the Missouri, to proceed to New York City, and, on arrival, report by letter to the Surgeon-General. S. O. 96, C. S., A. G. O.

GIRARD, A. C., Assistant Surgeon.—Relieved from duty in Department of the South, and assigned to duty at the U. S. Military Academy, West Point, N. Y. So much of S. O. 79, C. S., A. G. O., as grants him four months' sick-leave having been revoked. S. O. 90, A. G. O., April 25, 1874.

GIRARD, J. B., Assistant Surgeon.—Assigned to duty as Post Surgeon at Camp Lowell, A. T. S. O. 35, C. S., Department of Arizona.

FITZGERALD, J. A., Assistant Surgeon.—Relieved from duty at the U. S. Military Academy, and to report in person to the commanding officer, Department of the Columbia, for assignment to duty. S. O. 90, C. S., A. G. O.

MOFFATT, P., Assistant Surgeon.—Assigned to duty at Fort Garland, C. T. S. O. 32, C. S., District of New Mexico.

PATZKI, J. H., Assistant Surgeon.—Assigned to duty at Fort Fred. Steele, Wy. T. S. O. 65, Department of the Platte, May 9, 1874.

WOODRUFF, E., Assistant Surgeon. Relieved from duty in Department of Dakota, to proceed to Louisville, Ky., and, on arrival, report by letter to the Surgeon-General. S. O. 96, C. S., A. G. O.

DICKSON, J. M., Assistant Surgeon.—Relieved from duty in Department of the Platte, to proceed to Cincinnati, Ohio, and, on arrival, report by letter to the Surgeon-General. S. O. 96, C. S., A. G. O.

Obituary.

DR. JOHN H. GRISCOM, who died in this city, April 28th, was born in 1809. He graduated from the University of Pennsylvania in 1832. The following year he was appointed Assistant Physician of the New York Dispensary, of which he became Physician in 1834. From 1836 to 1840 he was Professor of Chemistry in the New York College of Pharmacy, and in 1842 he was appointed City Inspector, which position he held one year, when he became Visiting-Physician of New York Hospital, in which service he continued until a few years since. From 1848 to 1851 he was General Agent of the Commissioners of Emigration. Dr. Griscom was the author of a large number of medical books and essays, the most prominent of which were the following: "Animal Mechanism and Physiology," "The Sanitary Condition of the Laboring Classes of New York," and "The Uses and Abuses of Air and the Means of the Ventilation of Buildings." For some time past he had retired from active practice.

Dr. JOHN G. F. HOLSTON, Sr., died in Washington, D. C., May 1st. The following action was taken by the Zanesville (Ohio) Academy of Medicine, of which Dr. Holston was a member, at a meeting held May 2d :

Resolved, That in the death of Dr. Holston, the Zanesville Academy of Medicine loses one of its prominent members, and the profession at large an eminent physician and surgeon, of extensive professional and literary culture, ripe experience, and accurate judgment; and society a warm-hearted, genial, and generous member, whose life has been mainly devoted to the good of his fellow-beings.

Resolved, That we attend the obsequies of our deceased Fellow in a body.

Resolved, That we deeply sympathize with the family and relatives of the deceased.

Resolved, That the Corresponding Secretary transmit a copy of these resolutions to the family, the city press, and the medical journals.

C. C. HILDRETH, *Chairman*.

A. E. BELL, *Secretary pro tem*.

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